The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Fifty Years of Progress

AT the great gathering which assembled in London last week to join with the directors and other members of the families in celebrating the jubilee of the foundation of Brunner, Mond, and Co.'s works at Winnington, there was only one element missing, and that in the circumstances was inevitable. If the two founders of the undertaking, John Brunner and Ludwig Mond, could have been present or distant spectators of the meeting, they would have seen the realisation of nearly all they set out to accomplish fifty years ago. They would have seen the spirit and traditions for which they always stood perpetuated in their successors. They would have seen great financial and commercial success treated as they always treated it—not merely as a private triumph but as a responsible public trust. They would have seen the continuance of the intimate family spirit between company and workpeople which they first established, the same ideals after which they strove still being followed, the same alliance of science and industry which they brought about with such fruitful results still regarded as the basic condition of success. Lastly, they would have seen one of the most representative chemical assemblies ever collected together rejoicing in an achievement which has not only brought prosperity to a company, but repute to British science and industry throughout the world. And their successors, too, would have been additionally gratified if the founders could have witnessed personally the loyal spirit in which the trust bequeathed by them to their sons has been kept.

Perhaps it was the sincerity and the absence of all pretence that made this commemorative evening so complete a success, even more than the actual speaking, uniformly good and in keeping with the occasion as that was. From Sir William Alexander's dignified and discerning tribute to the firm's record down to the playful exchange of compliments between "Max" and "Ros" as the chairmen of two of our greatest chemical undertakings and members of two closely allied families, there was something of interest and value always being said. One incident that seemed to have a special significance was Mr. Roscoe Brunner's conveyance to the chairman of the British Dyestuffs Corporation on behalf of all present of their sympathy in the great task he had undertaken, of their congratulations on the success he had already attained, and of their cordial good wishes for his continued and further success in the future. This expression, which seemed to have something almost prophetic in it, preceded only by a few days the announcement that the Corporation's accounts for the past year show a profit of £102,656—a result which strengthens the hope that as Dr. Ludwig Mond secured for this country the benefits of a process first patented by the English chemists, Dyar and Hemming, so others may yet recover the heritage properly belonging to Great Britain as the result of Perkins's first production of a synthetic colour from coal tar.

In the various speeches during the evening there were many points worth attention, of which only a few may be noticed. It was the human side of the Brunner-Mond undertaking which Mr. Roscoe Brunner chiefly emphasised—the thoroughness with which the founders associated themselves as workers with the men they attracted to them, the loyalty with which all had laboured together as one great family, and the complete understanding which had led to so fine an example of team work. Sir Alfred Mond, who is coming to be regarded as one of our soundest thinkers on economic and commercial problems, emphasised afresh the importance of the three factors that account for the firm's success—commercial integrity, quality of production, and scientific management—and the view that industry must properly be regarded as a means of public service rather than of personal profit. Both Sir John Brunner and Sir Joseph Thomson saw

in the firm's record a convincing argument for the fuller application of science to industrial processes. While Sir Joseph reminded us of the lavish expenditure on research by American companies and the good financial return which it brings, it was pleasant to hear him defend one feature of English education which America lacks. There they seem to aim no more at an intellectual than at a social aristocracy, but are content with a fairly high and uniform level of efficiency. Defective as our educational methods are in some ways they still have the merit of always leaving a place for the exceptional man. No record illustrates better than that of Brunner, Mond and Co. the fact that it is the man of exceptional vision, initiative, and power who really counts, and the fact that we still produce them remains one of our best guarantees for the future.

Salesmanship in Chemical Industry

CONSUMPTION, said Sir Alfred Mond in his address to a conference of the Industrial League which met at Sir Ernest Benn's house at Oxted last week-end, is so enormously stimulated not only by demand but by salesmanship that if the number of people interested in selling commodities were reduced there might be a great diminution in consumption. Alternately, it is equally true that if the number of people interested in selling commodities were increased, either in number or in efficiency, there might be a great improvement in consumption. This applies not only to the merchant, who acts as a connecting link between producer and consumer and promotes a steady interchange of goods, but equally to the salesman proper, who is engaged to sell the goods of his company, and upon whose capacity the company's success largely depends. In some cases the work calls for little more than the natural instinct for inducing people to buy; in others it calls for a high technical equipment, in addition to this primitive instinct, and in no industry, perhaps, is a good technical equipment more needed than in the chemical industry. Yet, as was recently pointed out in these columns, no organisation exists for the training of the chemical salesman, beyond the domestic system which this or that firm may adopt, nor for any joint action among chemical salesmen themselves, nor for any occasional or regular conferences on the general problems of chemical salesmanship.

This constitutes an appreciable gap in chemical organisation on the commercial side, and leaves us some degrees behind America and Germany. Before the war the latter was considered the model country in this respect. German representatives, whether dealing with dyestuffs, fine chemicals, heavy chemicals, or chemical plant, were largely in the position of consultants, whose advice and experience were at the disposal of the customer and constituted a valuable form of "service." Latterly, perhaps, America has taken Germany's position in this respect. At any rate, with that passion for system and organisation which enters into all American business, salesmanship there is treated as an art or a science for which definite training is required, and chemical salesmen constitute a distinct and organised section of the commercial community. There is no apparent reason why we should not have an association of chemical salesmen, as of manufacturers and of merchants, and probably such a body could easily be formed if a few active minds would take the initiative. Here, as in so many matters, the need is for a leader, who will convene a number of colleagues together, start a simple organisation, and set to work. In that way a necessary and extremely useful addition might be made to the forces working for the good of the chemical industry

Potash from Cement Dusts

DURING the war considerable attention was given to the question of providing increased supplies of potash, and the most hopeful of the additional sources suggested was undoubtedly the dust from blast-furnace flue gases, in connection with which the name of Mr. Kenneth M. Chance was prominent. We were lately discussing the whole question of the newer sources of potash with a chemical engineer, who was unable to understand why greater attention had not been paid in this country to the promise held out by cement dusts. As our informant pointed out, there are probably some twenty collecting plants now in operation in the United States in connection with cement works, and, in spite of the fairly heavy initial outlay which is demanded in the way of precipitators, etc., it is firmly believed that the process has come to stay and that it will eventually prove one of the most important of American sources.

In the usual practice the kiln is fired with a jet of coal dust, and the ash from this dust is brought into more or less intimate contact with the potassium compounds which are volatilised from the materials from which the cement is made. The main difficulty which has to be faced is that the potassium compounds react with the coal ash, and when they settle out with the flue dust they do not readily yield to treatment with either hot or cold water. It has been found that a portion of the potash contained in the dust is insoluble even in acids, and evidence has been brought forward to show that part of the potash volatilised in the hotter zones of the kiln combines with the siliceous constitutents of the coal ash to form compounds of the nature of glass. Innumerable processes have been devised for rendering the potassium compounds more soluble, and it is possibly the lack of definite practical data as to how these methods have progressed which has discouraged the adoption of the system over here.

It would appear, however, that in America the problem is not being allowed to rest, and we recently came across a promising development which has been introduced by Mr. F. W. Huber, of Los Angeles. This investigator has found that if the cement flue dust has added to it (either before or after leaching with water) a proportion of carbon, such as powdered coal, equal in weight to the K_2O content of the dust, and also mixed with lime, a mass is produced which by heating in a rotary kiln to a temperature of some 800° C. yields a product in which practically the entire content of the potassium compounds is rendered soluble in water and can be removed by leaching. The washings are finally filtered and the filtrate is evaporated to recover the potassium compounds. We have, of course, no definite information as to how the process actually operates in practice, but it appears

to strike out in a rather different line from the many others which have been suggested, and it certainly shows promise of overcoming the difficulty.

Remuneration of Public Analysts

THE Institute of Chemistry has recently drawn attention to the conditions of service and remuneration of public analysts. Apparently not only are higher qualifications now demanded by the local authorities, but there is a tendency to revert to the inadequate pre-war scale of charges, which was at the rate of half-a-guinea or five shillings per sample analysed, in addition to a very small salary. When it is realised that the public analyst usually has to pay all the expenses of running his laboratory and requires the highest qualifications—equivalent to those of an F.I.C.—it will be obvious that the position is very unsatisfactory. The matter was recently brought to a head by the Gloucester authorities advertising for a new analyst under such conditions. The matter was inquired into by the Institute in conjunction with the Society of Public Analysts, which recommended that their members should not apply for the post, with the result that only four applications were received. The point has been raised whether any of the applicants are fully qualified for the work, and attention was directed to this in Parliament recently by Mr. Garland, and the matter is now being officially inquired into. The claim of the Institute, with which all qualified chemists will agree, is that in the case of public analysts other than those whose laboratories and staffs are provided by the authorities, whatever be the exact method of payment—by fee per sample or by a combination of salary and fee—the remuneration should be at the rate of not less than £1 1s. per sample for the first 100 examined, and not less than 15s. for each sample beyond that number.

Reduced Sulphate Prices

THE reduction of prices, just announced by the British Sulphate of Ammonia Federation, following upon several advances, is no doubt to be attributed to the depressed condition of agriculture and the slackening of the home demand. For home use, for July and August deliveries, the prices are £14 15s. per ton for best neutral quality and £13 12s. per ton for ordinary quality. These prices are for not less than four ton lots, and are strictly limited to home consumption. Fortunately for the industry the export demand continues steady, and good business has recently been done with Japan on a basis of £18 10s. per ton. What the effect on prices will be of the synthetic product when it comes on the market, it is impossible to foresee. It is understood that the Brunner-Mond large scale experiments are proceeding satisfactorily and that the output is roughly about a ton a day. Very little is known beyond this as to the progress of the work, and probably not much detailed information will be disclosed until the synthetic product is put on the market. It would not be surprising if this took place next year, though no authoritative statement has yet been made on the subject.

Business Visits to America

THE practice of paying interchange visits between this country and the United States is steadily growing, with advantages not only to the political and social relations of both nations, but to their commercial and industrial interests. Among the British visitors to the United States at present are Mr. Morton, chairman of Scottish Dyes, Ltd., who is investigating conditions in the American dyestuffs industry, and Mr. J. Arthur Reavell, of the Kestner Evaporator and Engineering Co., Ltd. Mr. Reavell, who sailed on the *Berengaria* on June 16, and expects to return about the end of this month, took with him a deputation from the National Benzol Association and several managers of colliery coke oven plants to inspect an American plant that is working on the Silica Gel process for the recovery of benzol from coke oven gases and the refining of crude oil distillates. This process has also been applied for solvent recovery and air-drying, and the party will inspect installations of this class. While in the States, Mr. Reavell will also visit some of the large Merrill oil heating installations, many of which are reported to be working successfully. These visits are to be commended to progressive British firms, as they tend to keep us in touch with industrial and technical developments in America, and also to disclose opportunities that would not otherwise be discovered for the development of British trade.

Points from Our News Pages

Reports are published (with illustrations) of the London dinner in commemoration of the jubilee of Brunner, Mond and Co. (pp. 4–9).

The accounts of the British Dyestuffs Corporation for the past year show a profit of £102,657 (p. 9).

The hearing of evidence in the formaldehyde inquiry was concluded on Monday, and the Referee's decision will be announced later (p. 10).

Our London Market Report states that there has been fair inquiry during the past week, but business actually has been slow (p. 17).

Our Scottish Market Report describes conditions in the heavy chemical market as very quiet (p. 20).

Book Received

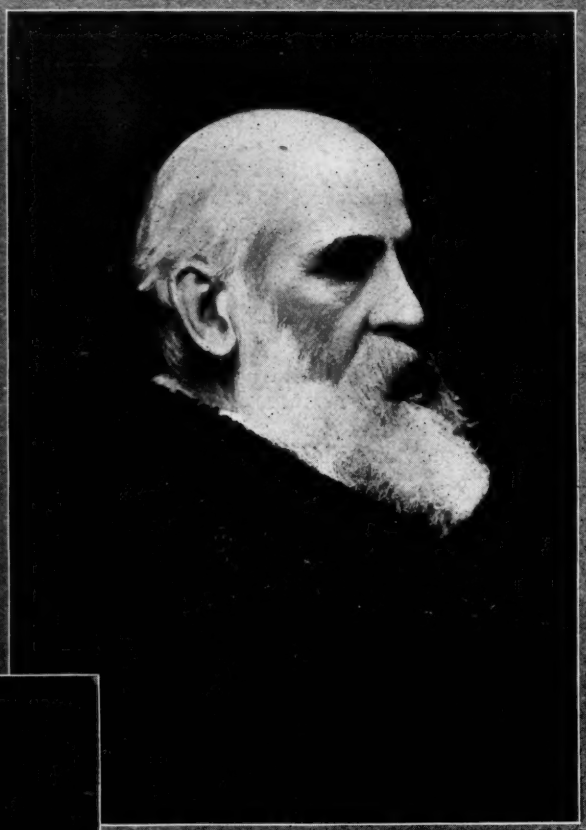
LES ISOTOPES. By A. Damiens. Paris: Gauthier-Villars et Cie. Pp. 118. 12 fr.

The Calendar

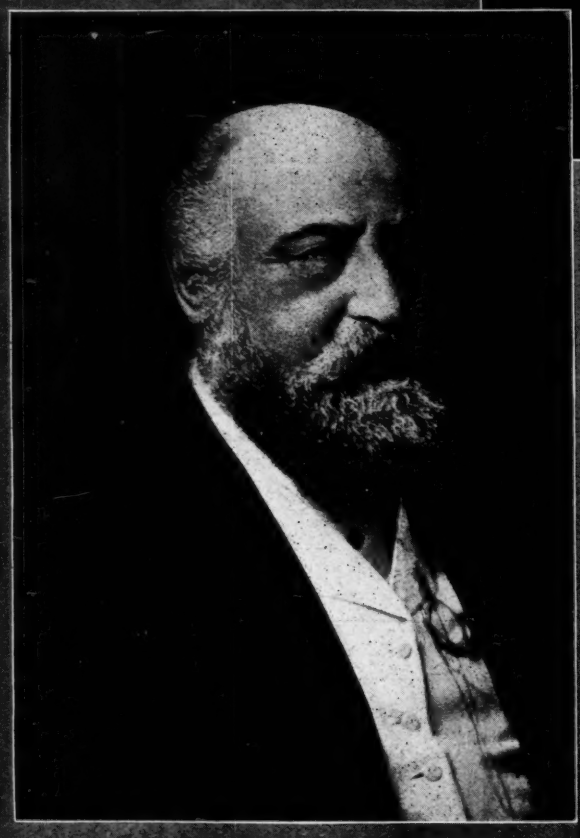
July 10	British Dyestuffs Corporation, Ltd.: Annual Meeting. 11 a.m.	Milton Hall, Deansgate, Manchester.
13 & 14	Faraday Society: Discussion on "Electronic Theory of Valency."	Cambridge.
Sept 10-13	Institute of Metals: Annual Meeting.	Manchester.
12-19	British Association for the Advancement of Science: Ninety-first Annual Meeting.	Liverpool.

BRUNNER-MOND JUBILEE.
1873–1923.

In connection with the Jubilee Celebrations of Brunner, Mond, & Co. we publish on this page photographs of the original founders: the late Sir John Brunner, Bt. and the late Dr. Ludwig Mond.



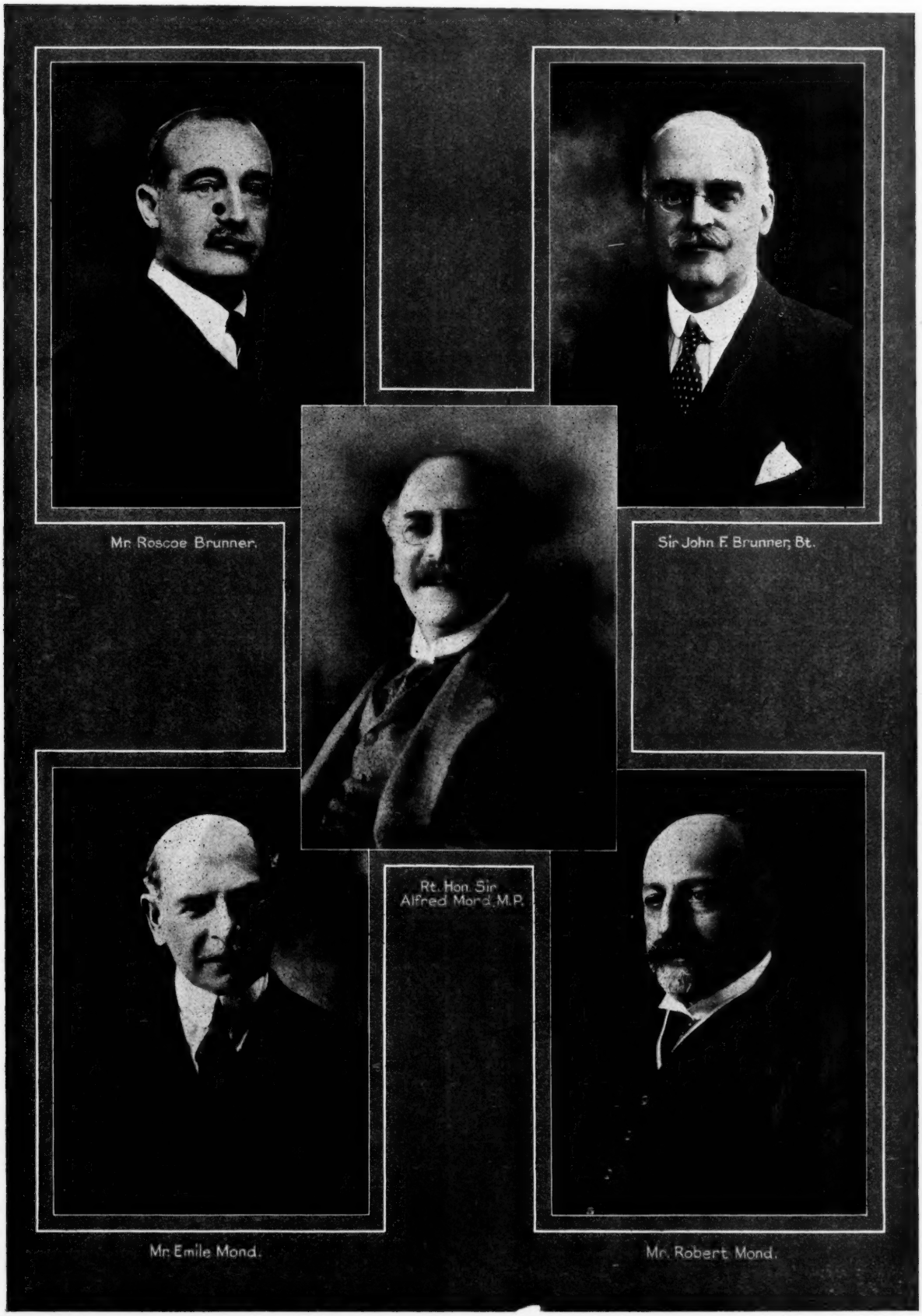
The late Sir John Brunner, Bt.



The late Dr. Ludwig Mond.

On the opposite page are photographs of their successors: Rt. Hon. Sir Alfred Mond, M.P. (son), Sir J. F. Brunner, Bt. (son), Mr. Roscoe Brunner, (son), Mr. Robert Mond, (son) and Mr. Emile Mond, (nephew).

Photographs by Elliott & Fry



Photographs by Russell & Sons, R. H. Creswell, E. O. Hoppé and H. Wrightson

The Jubilee of Brunner, Mond and Co.

A Great Commemorative Gathering

A DINNER given by the Chairman and Directors of Brunner, Mond and Co., Ltd., to celebrate the fiftieth anniversary of the founding of their Winnington Works in Cheshire, was held at the Hotel Victoria (Edward VII Rooms), London, on Friday, June 29. Mr. Roscoe Brunner, Chairman of the Company, presided, and the attendance (as will be seen from the list of guests) was distinguished and representative. The toast of "The King" was given from the Chair.

Sir William Alexander

In proposing the toast of Brunner, Mond and Co., BRIGADIER-GENERAL SIR WILLIAM ALEXANDER said that looking back on a history of fifty years, the culmination of which they were now celebrating, they recognised that here was a great record of splendid achievement and world-wide usefulness, a record of which the firm of Brunner, Mond and Co. had every reason to be proud, and on which they could be congratulated without reservation.

Viewing the march of progress, he continued, industrial developments may, I think, be grouped roughly into three classes, those based on created rather than natural needs, such as the demand for very rapid transport and improved means of communication of all kinds; secondly, those having an æsthetic basis, such as the colour industry, ministering to a desire for beauty and brightness; and thirdly, the great industries arising out of primary human needs. Man must be clothed, shod, fed and kept warm, and thus we get the textile, leather, mining and other great industries. A love of washing is probably not instinctive in man. (Laughter.) We were told recently in the House of Commons that our ancestors were satisfied with two baths in a lifetime, one at birth and one after death, both of them being involuntary. (Laughter.) But civilisation, custom, and good sense have in self defence created a demand for soap; progress in hygiene a demand for light in our dwellings, and thus for glass; progress in education, a demand for news, and thus for paper. Soda has become the badge, the very coat of arms, of the cult of domestic cleanliness. These human needs tend in some directions to outrun the direct natural supplies. It was indeed the cutting off of the latter which led to the discovery of the Leblanc process for the manufacture of soda, which after a century's honourable career in this country has now practically run its course.

Fifty Years of Progress

This evening we are celebrating the jubilee of the most successful industry of its kind in the world, and it has for its real, if undeclared, object the making and keeping of a cleaner, sweeter land, of a healthier and more efficient humanity. What are the landmarks in this pilgrimage of success? What are the determining factors in its history?

In married life the completion of fifty years is known as a golden wedding. As I see it, the success of Brunner, Mond and Co. has been due to the marriage of imagination with dogged application, of research with business acumen—in short, of brains with hard work. A disillusioned but hopelessly hopeful author once wrote a book called *How to be Happy though Married*. It is increasingly clear that in industry there can be no happiness without this marriage of brains and hard work, which is indeed the recipe for success.

I am saddened when I reflect on the different fates of the discoveries which were the starting point of the modern alkali industry and of the synthetic colour industry. It is not always easy to fix with accuracy and fairness the earliest beginnings of a great movement, but I think there is no doubt that the real history of the ammonia-soda process begins with the year 1838, when Dyar and Hemming took out their first patent and erected works in Whitechapel for the exploitation of their success. It was in the year 1856 that William Henry Perkin obtained the first artificial colour derived from coal tar products. It is a matter for legitimate pride, however, that both these revolutionary discoveries were made by Englishmen in England. To finish one's education abroad is no new thing, and both these discoveries underwent the grand tour. One of them, owing largely to apathy at home, settled abroad, and Germany, as you know, became the greatest colour producing country in the world. It has taken the greatest of wars to bring the prodigal home, and to-day we are witnessing a renaissance of the British Dyestuff Industry.

The other invention had a happier fate. We owe it to a Belgian, Ernest Solvay, that the apparently simple but technically extremely difficult ammonia-soda process was placed on a satisfactory practical footing. It was soon after this that Dr. Mond saw his opportunity and seized it. Vision followed by immediate action is one of the great factors of success. In 1873 Dr. Ludwig Mond and Mr. John Brunner built their first plant at Winnington. Very considerable technical difficulties were encountered at first. These were faced with courage and wonderful determination by Dr. Mond, who finally solved them by methods of strict research. He was supported by the faith and great business ability of his partner, Mr. John Brunner, and to-day the most eloquent tribute to their vision, tenacity, and work is the existence of the largest and most important ammonia-soda works in the world. In solving the many technical and economic problems these pioneers had to initiate supplementary plants and processes, such as the Mond gas plant and Nickel carbonyl process, and recently the installation of a synthetic ammonia plant at Billingham has been added. Whilst these organisations were established primarily for the increased efficiency of Brunner, Mond and Co.'s undertaking, each has become applicable as a separate concern to supply a much wider field of industry to the national profit and advantage. Again I might refer to the invaluable research and war work standing to the credit of the firm and to the long-sighted policy displayed by the firm in acquiring outside analogous interests, such as the Castner-Kellner and Electro Bleach and By-Products companies.

An Example of Team Work

The founders have had worthy successors. Mr. Roscoe Brunner, the bearer of two famous names, is what we know as a "live wire," and he is with ever increasing success upholding traditions of enterprise, courage, and service. It is a fine tribute to leadership and to the justice and fairness of the directors of this great concern that such a large proportion of their employees have completed 25, 35, and even 40 years in the service of the firm. In fact we have here an inspiring example of team work, than which I know nothing better.

It is profitable to reflect for a moment on the history of the Leblanc and ammonia-soda processes, for their fates illustrate the workings of the inexorable and sometimes mysterious laws of survival. The Leblanc process when fully established made complete use not only of the constituent elements of common salt, but of all the by-products arising out of the process, not only the sodium and the chlorine but the sulphur of the sulphuric acid, the gold, silver, and copper of the pyrites, and the recovered manganese dioxide, each improvement being due to the skill and unremitting labour of many distinguished chemists. In the ammonia-soda process, the problem of the chlorine recovery has perhaps not been solved to complete satisfaction, and the process makes use of a relatively costly and not too easily managed substance, ammonia, and yet it is the latter process which holds the field to-day. It illustrates the triumph of the simpler process.

Great Britain's Supremacy in Heavy Chemicals

Owing to the efforts of Brunner, Mond and Co. and of the United Alkali Co., whose centenary we were celebrating the other day, Great Britain is still supreme in the heavy chemical industry. We do not hold the same commanding position in the fine chemical and dyestuff industry, but it is with no desire to plead for the latter that I refer to them. It is rather to emphasise the truth of which I am more and more convinced, and which will sooner or later be recognised as vital to the national prosperity, that we are all members one of another. This, as you know, has been fully realised in Germany where gradually and almost of necessity these three branches of the chemical industry have been woven into one organisation, making it enormously strong both for offence and defence. This amalgamation of powerful and, in the past,

rival interests has not been effected on grounds of altruism but because it is sound business.

The firm of Brunner, Mond and Co. is a sun in the chemical firmament. The colour industry which I represent here to-day is making a great effort to establish itself in this country, but we have storms and head winds to contend against, and if only the sun will come into our sky to shine through the rain, we shall get sooner than we otherwise would the rainbow we are seeking to create.

In concluding, I should like to refer very briefly to some of the social activities surrounding the life of the employees of this great firm. Brunner, Mond and Co. have been pioneers in the reduction of hours of work, in granting holidays with double pay, and have led in the introduction of baths for workmen, houses for workers, pensions for the feeble and disabled, and long service awards for merit. With such a record is it any wonder that the output of the works in 1881 has been multiplied 28 times in 1922.

Gentlemen, it is with the greatest pleasure that I give this toast and ask you to drink to the continued prosperity of Brunner, Mond and Co. (Cheers.)

Mr. Roscoe Brunner

The CHAIRMAN, in thanking all present for the cordial way in which they had received the toast, said he wished particularly to thank Sir William Alexander for the kind things he had said about the firm. He was quite certain he was expressing the feelings of the company when he offered to Sir William first their sympathy in the great task he had undertaken—(hear, hear); secondly, their congratulations on the great success which he had already attained; and thirdly, and very cordially, their good wishes for his continued and further success in the future. (Cheers.) Distinguished as that gathering was, there were many other distinguished men who were unable to attend, of whom he might mention a few. The President of the Board of Trade had written expressing his regret. Mr. James M. Beck, of the United States Government—and a better friend of Great Britain did not exist—congratulated the company and wished it continued and even greater success. The son of that Ernest Solvay, of whom Sir William Alexander had spoken, was a director of the company. He would greatly have wished to be present, but he was not in the best of health and asked to be excused. The great Solvay Company were represented by two of their directors—the son and grandson of one of the founders and the son of the other. (Cheers.) All of the company's directors were present with the exception of Mr. Robert Mond, whose medical advisers had sent him to the Continent for a rest. Sir William Alexander had not referred to the United States. There they had taken the same action as Germany and combined the chemical trade, including the dye trade, in one organisation. He had a cablegram from the chairman of the Allied Chemical and Dye Corporation extending to Brunner, Mond and Co., on behalf of the chairman and directors, hearty congratulations on the completion of fifty years of service, coupled with a hope that the future had still greater things in store. A cablegram had also been received from Lord Leverhulme from Sweden offering his congratulations, and also a message from Lord Sheffield, better known to them as Lord Stanley of Alderley, who was very closely associated with the founders in their early days. Last, but not least, he had an interesting letter from Mr. Cecil Parr, recently chairman of Parrs Bank, Ltd., recounting some of the conditions in the company's early days.

The Traditions of the Company

Speaking with pride of the high traditions of the company, the CHAIRMAN added: We are proud of our founders; we are proud of their success; we are prouder still that we who have succeeded them have been able to carry on their principles and traditions. (Hear, hear.) We are proud of our record in peace and in war; and perhaps we are proudest of all of this—that there has never been with us a Brunner man or a Mond man but that all who have worked with us and for us have been Brunner-Mond men right through. (Cheers.) Those who direct the concern now are sons of the founders. We are looking forward to the time when the grandsons of the founders will, in due course, succeed us and carry on the same traditions. Sir William Alexander has referred to the fact that we have had in the past, and still have, a great many men who have been associated with the company for many years. It was my proud task recently to present gold medals to a number of the men who had been with the company for over forty years. Nearly 30 per cent. of our present staff have been with us over twenty-five years. I claim that that illustrates the team spirit of which I have spoken. Of that team spirit we are very, very proud, as I think we are all entitled to be. (Cheers.)

Sir Alfred Mond

Sir ALFRED MOND, M.P., who also responded, first thanked Sir William Alexander for the eloquent manner in which he had proposed the toast of the company and for his very kind reference to the efforts of his father in founding that great concern. Sir William, in the course of his very interesting review of the history of the manufacture of alkali in this country, pointed out the long and honourable tradition of that great invention, the Leblanc process, and its gradual supercession by another chemical process to achieve the same end, of which they were now celebrating the establishment in this country fifty years ago. The chemical industry must be and always would be progressive. No one could say whether the ammonia-soda process would continue for a century or not. One thing, however, he was certain of—that the organisation which had been created during the past fifty years would always go on creating new methods, new processes, and new ideas for the great capital industry in which they were engaged. He himself had been connected with the firm nearly fifty years. He remembered at the age of 4½ paying his first visit to Winnington when the works were started, so small that the visitor would hardly have noticed they were there. One of the oldest hands had recently been telling him of how he and his father cut rubber rings of the right sizes with a chisel and fitted them, and how in many other ways his father worked with the men to ensure success. Sir Alfred recalled, too, the first office of which the chairman's father was the only occupant, with the exception of the office boy who carried the letters to and fro.

A Great Family Spirit

I recall these simple facts, Sir Alfred said, because to-day many people think that an industry cannot be established unless you begin with a colossal headquarters. This business, like most successful businesses, has grown from little to great, and with it has grown a devoted staff, some of whom have fallen by the way but many of whom are still with us, and to whom the success of the firm is so largely due. You may be a leader, but it is of little use being a leader unless you have followers. (Hear, hear.) The great power of those who started this concern was that they knew how to surround themselves with men of ability, with whom they lived in a state of friendship, and who showed to them the devotion of a great family. In fact, Brunner, Mond and Co. is to-day a great family. (Cheers.) This is one of the key reasons of its success. Among the directors, among the staff, among the workpeople, that spirit up to to-day has been maintained, and those of you engaged in industry know how important it has become to maintain that kind of relation where a large number of men are employed. In the early days most of the men were known by their Christian names, and I am glad to say that many are known in that way still. We have endeavoured and have succeeded through the works council in keeping in touch and harmony with those who represent the men.

In the critical days of the war we were suddenly called upon to become manufacturers of explosives on a very large scale, and I remember well the effect of informing the men that in connection with the patriotic task we were jointly entering upon the company were precluded from making any profit out of the transaction. The response from the workmen was magnificent. They worked day and night, and one man, engaged in an unpleasant task, remarked to me that he regarded every shell he filled as a shell for his boy at the front. (Hear, hear.) The same spirit is maintained in peace time. One of the essentials for the future of industrial success is to foster and maintain that great spirit.

A Great Romance

Looking through some of our historical records I found a note by Mr. John Brunner, in which he told one of the few officials that he was never to keep less than 15 casks of alkali in stock for the home trade. (Laughter.) I am afraid that the home trade to-day would feel very insecure with such a

reserve. The story of this concern is a great romance—the history of two young men, with very little means, but great faith and great enthusiasm, launching themselves on an unknown path. Their stimulating example remains not only to us but to all of those on whom falls the burden and duty of industry in this country. (Cheers.) From these small beginnings we have to-day Brunner, Mond and Co., with 20 million capital and 6,500 employees; the Castner-Kellner Co., with a capital of 2 million and 1,200 employees; Synthetic Ammonia Co. with 2 millions and 1,200 employees; Buxton Lime, with £750,000 and 1,800 employees; Electro Bleach and By-Products, Ltd., with £300,000 and 300 employees; and Chance and Hunt with £550,000 and 1,200 employees. This success is firmly and deeply rooted in three directions—commercial integrity, quality of production, and scientific management. These three factors explain the success of the past.

We are not resting on our oars, but looking back on the past only stimulates us to greater efforts for the future. A great pride and responsibility rests on the leaders of this great industry in a great industrial country. I am sure we all feel deeply honoured by the ready response of so many distinguished men, who have gathered with us to celebrate the completion of our jubilee. In thus responding they are not expressing merely a personal feeling but are assisting in an event of national importance, and I am sure that I and my fellow directors will regard this tribute—for such I consider it—to the history of our past as one of the spurs to still further effort in the future. (Cheers.)

The Toast of "Science"

In proposing the toast of "Science," SIR JOHN BRUNNER remarked that, while chemical industry owed practically everything to the applications of science, the commercial man also played a great part. His father once remarked to Dr. Mond, "For goodness sake, Mond, stop your experiments, and let's make a little money." (Laughter.) The man of science needed to be associated with the commercial man, and in the case of Brunner, Mond and Co. the association had been remarkably happy and successful. He had heard commercial men go so far as to say that when they had got all they could out of the inventor he ought to be drowned. (Laughter.)

In pleading for a liberal prosecution of research Sir John said that our Government had done very little in this direction in the past, and both the State and private manufacturers should do all that was possible to encourage the research spirit. In referring to Sir Joseph Thomson and announcing that there were fourteen Fellows of the Royal Society present, he added that chemical manufacturers would be more pleased if they told them how to build the atom up instead of knocking it to pieces.

SIR J. J. THOMSON, in responding, said that the firm whose jubilee they were celebrating was perhaps the most conspicuous example in this country of the great results following the application of scientific methods to industrial processes. Fifty years ago Dr. Ludwig Mond, by his great insight, laid the foundations of an industry which was of national importance to this country. In those days not so much was heard of the application of science to industry as was heard to-day, and the greater credit was due to those who foresaw the possibilities. We had yet to learn a great deal about the advantages of a more liberal expenditure on science. In America he had recently seen examples of the most liberal expenditure on research, and the results had everywhere justified it. Apart from immediate financial returns, the spirit of research in a commercial undertaking ensured continued youthfulness and freshness, and in this connection he pleaded that our training should make provision for the exceptional man, whose presence was one of the great safeguards against competition.

The Guests

The toast of "The Guests" was proposed by the Right Hon. G. W. Balfour, and responded to by Dr. Walter Leaf and the Vice-Chancellor of Cambridge University.

"Max" and "Ros"

In proposing the final toast of the evening, that of "The Chairman," SIR MAX MUSPRATT said that "Ros" and himself were both near enough to fifty to claim the proud position of jubilee babies. He could not recall the time when he did not know their Chairman, with whom and other members of the two families he had spent the happiest of times as boys at Llanfairfechan. "Ros" and himself had one point in common—they were both born lazy. (Laughter). A few years ago, when "Ros" was appointed chairman, he predicted that he would "stick it" and make a success of it, and that prediction had been amply fulfilled. He had risen to his opportunities and duties magnificently, and he was sure he was proud of having been born in such a great era—a time that called for the best that was in everyone of them. They had difficult problems to solve—scientific, social, financial, and economic—all interlocked and intertwined, and they could only be solved by all doing their best. Friendly rivalry played its part in bringing out the best in human nature, and from this point of view he had the greatest pleasure in proposing the Chairman's health and wishing him even greater success than that he had already attained. (Cheers.)

The CHAIRMAN, in acknowledging the toast, said that the traditions of Sir Max Muspratt's family went back fifty years beyond the traditions of his own, but he was certain that both of them were more proud of those traditions than of anything else. He spent a week-end with his father just before he died, and when his father told him he was glad he had succeeded him and was proud of the way in which he had begun, he replied, "You had very many difficulties when you first began business, but I don't think your difficulties were as great as those of your successor. Your difficulties were with nature, with plant, and such things; our difficulties are going to be with the human race." Fortunately, the company had experienced very little of the troubles of the labour world. In the course of fifty years they had had only one strike that lasted only a few days, and when the men ran back to their work, realising that they had made a mistake, the company turned a blind eye on their absence. That illustrated the tradition of the firm. They were proud of the work the men had done and proud of their friendship and trust.

Referring to the relation of banks to business, he said he was once sent for as a young director of Brunner, Mond and Co. by the local manager of Parr's Bank. The manager told him of what he was perfectly well aware—that he had an overdraft—(laughter)—and asked when he was going to put his account in credit. His reply was that he hoped he would never have his account in credit. That staggered him. (Laughter.) They had a long and heated argument before the manager recognised that banks existed for the benefit of the customers and not the customers for the benefit of the banks. (Cheers.) That old-fashioned idea of a bank's function had disappeared. It was the wise man who borrowed money from the bank and the foolish person who entrusted his money to the custody of the bank. (Cheers.)

Complete List of Guests

Dr. J. George Adami (Vice-Chancellor, Liverpool University); G E. Alexander (British Glass Industries, Ltd.); Brig.-General Sir William Alexander (British Dyestuffs Corporation, Ltd.); J. Sandeman Allen (Chairman, Liverpool Chamber of Commerce); R. L. Allen (Brunner, Mond and Co.); Lieut.-Colonel F. H. Allhusen (J. C. Eno, Ltd.); James R. L. Allott (Birchenwood Colliery Co., Ltd., Kidsgrove); Dr. E. F. Armstrong (President, Society of Chemical Industry); A. L. Arnold (W. A. Arnold and Sons, Manchester); Percy Ashley, C.B. (Board of Trade).

Rt. Hon. G. W. Balfour, LL.D. (Brunner, Mond and Co.); Professor E. C. C. Baly (The University, Liverpool); A. Bazire (London); Sir George T. Beilby (Castner-Kellner Alkali Co.); Geo. A. J. Bell (George Bell and Sons, London); Sir Hugh Bell (Brunner, Mond and Co.); Trevor H. Bell (Brunner, Mond and Co., Buenos Aires); Stuart J. Bevan, K.C.; R. M. Bewick (United Alkali Co.); C. F. T. Blyth (Blyth, Dutton, Hartley and Blyth, London); Major A. B. Boyd-Carpenter, M.P.; Darcy Braddell (Dean and Braddell, London); C. F. Bristol (Chance and Hunt, Ltd.); G. H. Brock (Moore and Brock, Northwich); Colonel Sir E. A. Brotherton, M.P. (United Alkali Co.); Anthony Brunner (Belmont Hall, Northwich); Felix J. M. Brunner (Brunner, Mond and Co.); Sir John Brunner (Brunner, Mond and Co.); Roscoe Brunner (Brunner, Mond and Co.); H. P. J. Burstall (London); H. D. Butchart (Electro-Bleach and By-Products, Ltd., Middlewich); Guyton Butler (Chance and Hunt, Ltd.).

W. A. S. Calder (Chance and Hunt, Ltd.); A. Campbell (Anglo-Persian Oil Co.); Major G. A. J. Cantrell-Hubbersty (Buxton Lime Firms, Ltd.); Professor H. C. H. Carpenter (Castner-Kellner Alkali Co.); Robert L. Carter (Sheppards and Co., London); A. S. Chamberlain (Electro-Bleach and By-Products); A. Macomb Chance (Chance and Hunt, Ltd.); Edgar P. Chance (Chance and

Hunt, Ltd.); Kenneth M. Chance (British Cyanides Co., Ltd.); A. Chaston Chapman, F.R.S. (President of the Institute of Chemistry); H. W. Christie (United Turkey Red Co., Ltd.); Dr. G. C. Clayton, M.P. (United Alkali Co.); Rt. Hon. J. R. Clynes, M.P.; Douglas H. Coghill (Crowham Manor, Battle); Sir H. A. Colefax, K.C.; Arthur Colegate (Brunner, Mond and Co.); Herbert Cooper (Edwards, Cooper and Co., Porto Alegre); T. B. S. Cooper (Spurrier, Glazebrook and Co., Ltd., Manchester); Sir Arthur Crosfield (London); Lieut.-Colonel Geo. Crosfield (London); C. F. Cross (Cross and Bevan, London); W. Cullen (British South African Explosives Co., Ltd.).

W. A. Damon (H.M. Inspector of Alkali Works); J. E. Davidson (United Alkali Co.); R. H. Davidson (United Alkali Co.); Newton Davies (Simpson, Davies and Sons, Ltd., Runcorn); J. L. Deuchar (Castner-Kellner Alkali Co.); P. C. Dickens (Synthetic Ammonia and Nitrates, Ltd., Billingham); Professor F. G. Donnan (University College, London); W. E. Dudley (Co-operative Wholesale Society, Ltd.).

D. Owen Evans (Mond Nickel Co., Ltd.); J. Fairlie (H. C. Fairlie and Co., Ltd., Falkirk); Dr. R. C. Farmer (Research Department, Woolwich); Kenneth Fisher (The School, Oundle); J. E. Fletcher (A. and J. E. Fletcher, Northwich); Lieut.-Colonel J. Y. Foster (Joseph Foster and Sons, Preston); Major J. H. Foster (Joseph Foster and Sons, Preston); Percy Fowler (Brunner, Mond and Co. (China), Ltd., Shanghai); W. Temple Franks (Comptroller-General, Patent Office); Captain Freeth (Brunner, Mond and Co.); J. Mason Frith (S. Taylor, Frith and Co., Ltd., Runcorn).

Sir Gilbert Francis Garnsey, (Price, Waterhouse and Co., London); H. Glendinning (Brunner, Mond and Co.); E. O. Glover (Electro-Bleach and By-Products); J. H. Gold (Brunner, Mond and Co.); B. A. H. Goldie (Sheppards and Co., London); W. W. Gossage (Norfolk); N. H. Graesser (Graesser Monsanto Chemical Works, Ruabon); J. Hunter Gray, K.C.; L. H. R. Greenhalgh (Lever Brothers, Ltd.).

F. E. Hamer (THE CHEMICAL AGE); C. H. Hamilton (Joseph Crosfield and Sons, Ltd.); J. Bruce Harding (Robert Heath and Low-Moor, Ltd., Stoke-on-Trent); E. B. Harlock (Brunner, Mond and Co.); J. J. Harper (Brunner, Mond and Co.); A. Travers Hawes (Brunner, Mond and Co.); Sir H. Frank Heath (Department of Scientific and Industrial Research); Ernest Hickson (Hickson and Partners, Ltd., Bradford); Norman N. Holden (Hardman and Holden, Ltd., Manchester); H. A. Humphrey (Synthetic Ammonia and Nitrates, Ltd., Billingham); Edwin J. Hunt (Chance and Hunt, Ltd.); Stainer Hutchins (Electro-Bleach and By-Products); G. P. Hyslop (Robert Heath and Low-Moor, Ltd., Stoke-on-Trent).

F. W. Ingall (Westminster Bank, Ltd.); David G. Irvine (T. and T. G. Irvine, Liverpool).

J. E. James (United Alkali Co.); Sir J. G. Jarmay (Brunner, Mond and Co.); Sir Francis Joseph (Settle, Speakman and Co., Ltd., Alsager).

A. R. Kennedy, K.C.; H. Kingdon (Joseph Crosfield and Sons, Ltd.); G. A. Knowles (Cwmbran Chemical Co., Ltd., Cwmbran).

Dr. T. C. Lamb (Brunner, Mond and Co.); Sir Alexander Lawrence (Assistant Treasury Solicitor); Walter Leaf (Westminster Bank, Ltd.); J. J. Lees (Buxton Lime Firms, Ltd.); Professor F. A. Lindemann (Christ Church, Oxford); Thos. C. Locker (Thomas Locker and Co., Ltd., Warrington).

J. McDowell (Lever Brothers, Ltd.); Hon. F. F. Macnaghten (British-American Tobacco Co., Ltd.); J. McNaughton (R. Craig and Sons, Ltd., Caldercruix); Captain D. Marsh (Brunner, Mond and Co.); J. B. Matthews, K.C.; T. Meares (Beale and Co., London); Dr. Stephen Miall (London); H. S. Mingard (London); Rt. Hon. Sir Alfred Mond, M.P. (Brunner, Mond and Co.); Alfred Mond; E. S. Mond (Brunner, Mond and Co.); Philip Mond (Mond Nickel Co., Ltd.); Bernard Moore (Stoke-on-Trent); Tom Moore (Moore and Brock, Northwich); R. Morris (Chance and Hunt); H. M. Moss (Northwich); J. R Murray (Buxton Lime Firms, Ltd); H. Muspratt (United Alkali Co.); Sir Max Muspratt (United Alkali Co.).

W. Neill (Castner-Kellner Alkali Co.); J. G. Nicholson (Brunner, Mond and Co.); P. Buchanan Nicholson (Arthur and Hinshaw, Glasgow); R. T. Nugent (Federation of British Industries).

Rev. Dr. E. C. Pearce (Vice-Chancellor, Cambridge University); J. W. Pearson (British Oil and Cake Mills, Ltd.); Sir Wm. H. Peat (W. B. Peat and Co., London); Professor W. H. Perkin (Oxford); R. G. Perry (British Trade Corporation); John T. Petro (Castner-Kellner Alkali Co.); Lieut.-Colonel G. P. Pollitt (Brunner, Mond and Co.); C. F. Poole (Brunner, Mond and Co.); Sir W. Pope (Cambridge); H. E. Potts (W. P. Thompson and Co., Liverpool); E. B. Pratt (Brunner, Mond and Co. (India), Ltd., Calcutta).

John Rae (Westminster Bank, Ltd.); J. E. A. Rayner (United Alkali Co.); Sir James W. Ritchie (William Ritchie and Son, London); J. C. Robertson (Westminster Bank, Ltd.); Sir Robert Robertson (Government Laboratory); S. Robinson (Widnes Foundry Co., Ltd., Widnes); Sir Thomas Robinson, M.P. (Allied Association of Bleachers, Dyers, etc.); Sir John Russell (Lawes Agricultural Trust); T. M. Ryan (Buxton Lime Firms, Ltd.).

Colonel J. A. Saner (Weaver Navigation Trustees); C. G. Saunders (Brunner, Mond and Co.); B. Carrington Sellars (East Lancashire Chemical Co.); Dr. P. Shard (Brunner, Mond and Co.); W. A. Short (United Alkali Co.); Roger Percy Sing (Union Cold Storage Co., Ltd.); A. T. Smith (Brunner, Mond and Co.); Ernest John Solvay (Solvay and Co., Brussels); Louis M. Solvay (Solvay and Co., Brussels); Seth Somers (Walter Somers, Ltd., Halesowen); F. C. O. Speyer (British Sulphate of Ammonia Federation); J. H. Stamp (London); L. H. Swinbank (Madeley Coal, Coke and Brick Co., Ltd.); Jas. Swinburne (Electro-Bleach and By-Products).

Andrew Wilson Tait (British Aluminium Co., Ltd.); A. W. Tangye (Brunner, Mond and Co.); W. A. Tennant (C. Tennant, Sons, and Co., Ltd., London); Sir J. J. Thomson (National Physical Laboratory); Sir R. Threlfall (Birmingham); Shirley S. Timmis (Beaconsfield); Emile M. Tournay-Solvay (Solvay and Co., Brussels); Major W. H. Tuck (Solvay and Co., Brussels).

J. O. Unwin (Davidson, Unwin and Co., London); W. H. Upjohn K.C.

Geo. P. Varley (John Varley and Co., Ltd., St. Helens).

Brig.-Gen. J. W. Walker (Alex. Walker and Co., Ltd., Irvine); G. D. Waters (Brunner, Mond and Co. (Japan), Ltd., Kobe); D. Milne Watson (London); Guy Watts (Simpson, Davies and Sons, Ltd., Runcorn); John I. Watts (Brunner, Mond and Co.); Chas. Webster (James Webster and Bro., Ltd., Liverpool); P. B. White (Edmund D. White and Sons, Liverpool); T. N. White (Edmund D. White and Sons); Major H. E. Wilbraham (Weaver Navigation Trustees); H. J. Wilson (Ministry of Labour); W. J. U. Woolcock (Association of British Chemical Manufacturers).

British Dyestuffs Corporation

A Profit of £102,657

THE directors of the British Dyestuffs Corporation, Ltd., in their report for the year ended October 31, 1922, state that the result of the year's transactions (including those of the associated companies), after providing £411,382 for depreciation and crediting the further amount estimated to be recovered in respect of excess profits duty, is a profit of £102,657, and the balance of loss carried forward from the previous period amounts to £803,355, leaving to be carried forward a deficit of £700,698.

Negotiations with the Inland Revenue authorities in respect of claims for return of excess profits duty have delayed the completion and presentation of the accounts. As excess profits duty has now terminated, the directors anticipate that hereafter they will be able to issue the accounts at a much earlier date. In spite of severe restriction in the manufacture of dyestuffs, due to the serious depression in the dye using industries and of substantial reductions in selling prices, the trading results for the year under review show a marked improvement over those for the previous year.

The directors are glad to report that continued progress has been made both in research and in the improvement of processes of manufacture. The company's undertakings are now capable of meeting to a very large extent the requirements of the colour users in this country.

The liquidation of surplus stocks accumulated in previous years has been completed, and stocks on hand have been written down to current market values. At the date of report the company had in the bank or invested in easily realisable securities a total sum of more than £2,000,000. The directors are of opinion that it would be advantageous for administrative purposes to liquidate the associated companies, namely, British Dyestuffs Corporation (Huddersfield), Ltd., British Dyestuffs Corporation (Blackley), Ltd., and Claus and Co., Ltd., and to transfer their undertakings to British Dyestuffs Corporation, Ltd., which will then become the sole owning and operating company. Meetings of the associated companies will shortly be called for this purpose.

Reparation Dyestuffs

IN some quarters an unofficial statement has been made that the Board of Trade would in future publish in the *Board of Trade Journal* a detailed list of all reparation dyestuffs received at the time of their arrival in this country. The British Chemical and Dyestuff Traders' Association now state that the Board of Trade have not agreed to do this. The only notification will be in the lists issued by the agents (the British Dyestuffs Corporation, Ltd.). The discounts to purchasers of large quantities will continue as hitherto. The importation of dyes from Germany as reparations will cease in December, 1924. America has ceased to take delivery of dyes from Germany as reparation, and the quantity allowed this country has consequently increased.

Formaldehyde Inquiry

Dr. Ormandy's Views on Synthesis

WHEN the hearing of the complaint of the chemical merchants, that formaldehyde has been improperly included in the Board of Trade List for purposes of duty under the Safeguarding of Industries Act, was resumed on Thursday, June 28, the whole of the sitting was occupied with the hearing of evidence *in camera*.

On the following day (Friday, June 29), Dr. W. R. Ormandy, who had given evidence privately on the previous day on behalf of Synthite, Ltd., was cross-examined on general points, and said that the plant used by Synthite, Ltd., had to be kept working continuously or else completely stopped. Questioned as to his views of what constitutes a synthesis, he said he considered the manufacture of formaldehyde from methyl alcohol a synthetic process *per se*, and the view that formaldehyde was a synthetic product was strengthened by the fact that it was possible to synthesise the methyl alcohol from which it was made. His view of synthesis was that by means of a controlled chemical reaction it was possible to obtain, from one body, another body which was desired, and he paid no attention to whether they were losing something or adding something in the process. The idea that because there was degradation there was no synthesis was utterly wrong, although it was often made use of. He agreed that the formation of methyl alcohol into formaldehyde was a degradation, but it was a degradation in the sense in which the word was used in thermo-dynamics, and had nothing whatever to do with chemistry. The word was not universally used in chemistry, and he personally never employed the word except in the thermo-dynamic sense.

"Degradation" and "Oxidation"

Answering the Referee, Dr. Ormandy said that the word degradation was merely a synonym for "construction." They might go up or down, but the object was to construct from body A, through any number of steps, a body B. Asked whether his view was that it had nothing to do with the building up of carbon atoms, Dr. Ormandy said that if they were speaking of nuclear synthesis they might talk of building up carbon atoms, because they then had more than one carbon atom, but when dealing with methyl alcohol and converting it into formaldehyde they could not speak in this way because there was only one carbon atom. In short, he attached no importance to whether they added to a substance or took something from it, so long as they got the substance that was desired. If the chemical reaction was controlled, then it was a synthesis. It was commonly agreed among chemists that if it were possible to produce the original material from its elements—in this case methyl alcohol—then the whole process would be considered synthetic. In any case, he regarded the conversion from methyl alcohol into formaldehyde by itself as a synthesis. In other words, this step of conversion from methyl alcohol to formaldehyde was synthetic because it was carried out from a body—methyl alcohol—which could be synthesised from its elements. He believed that the bulk of chemists would agree that the conversion from methyl alcohol to formaldehyde was, in itself, a synthesis.

Again, in answer to questions concerning oxidation, Dr. Ormandy replied that only when the step was a controlled oxidation, resulting in the production of another body which it was desired to get, could it be regarded as synthetic. Otherwise the burning of coal, which was oxidation, would have to be regarded as a synthesis. As to the degree of "control" in the manufacture of formaldehyde, Dr. Ormandy reminded cross-examining counsel that if the oxidation of methyl alcohol were left to itself, formic acid would be formed and not formaldehyde, and there was no better example than this very substance of a controlled reaction.

Mr. Swan then made several references to Richter's book in which there was a differentiation between synthetic methods and methods which were not.

Richter's Theories

Dr. Ormandy said that Richter nearly always dealt with nuclear synthesis and from that work he drew the conclusion that Richter held the view that there could be no nuclear synthesis in the case of a substance which only had one carbon atom. Richter applied his term "synthesis" almost entirely to nuclear synthesis, and the arguments which were based on these multi-carbon bodies seemed to him to be quite irrelevant, having in mind that in this case they were dealing with bodies which contained only one carbon atom.

Counsel made references to several substances dealt with in Richter which, he suggested, were in conflict with the views put forward by Dr. Ormandy, but the Referee, in suggesting that the number of instances might be limited, said it was perfectly clear that Dr. Ormandy held the view that Richter was dealing with nuclear synthesis and did not agree that this was the only synthesis.

Later, Dr. Ormandy, replying to the Referee, said it was necessary to distinguish between the scientific and the commercial meaning of synthesis, *i.e.*, between a synthesis which could be carried out commercially and one which was merely a scientific possibility.

Sir Arthur Colefax, intervening, said the whole point which it was desired to make on this was that a product was synthetic if it were possible to synthesise the natural product from which it was made, in this case the methyl alcohol, and that could be done.

Dr. Ormandy, replying to further questions, said that the process for the manufacture of formaldehyde which had been described to the Referee was one which would get out of control if there were not constant supervision. As to colour, he said that the substance which came into this country—speaking from his experience of Germany—was always water-white, and that if it were coloured in any way this colouring would be due to iron introduced into the cask. The product was always pure unless there had been an accident during the operations of manufacture. It was more profitable to manufacture a colourless product.

Trade Custom

The only other witness for the opponents was Mr. S. A. Brashier (Walter H. Brown and Co., Ltd., chemical merchants of London). His evidence was given as to trade custom, and he said that during the many years he had been associated with the trade he had always held the view that formaldehyde was a fine chemical. It was a 40 per cent. pure product which indicated that it was of a high degree of purity; the commercial formaldehyde was a very pure substance. About 95 per cent. of his firm's sales were for disinfectants.

This concluded the evidence.

Sir Arthur Colefax, K.C., addressing the Referee on behalf of the opponents to the complaint, submitted that formaldehyde was properly included in the Board of Trade List on the three grounds that it is a chemical reagent, a fine chemical, and a synthetic organic chemical.

Referee's Views on Trade Usage

AT the adjourned hearing of the inquiry, on Monday, July 2, Mr. Swan addressed the Referee on behalf of the complainants, and, in the first place, discussed the question of the delay which had occurred in disposing of the complaints which had been made under the Act.

The Referee pointed out that he was not thinking so much of this particular case, but of the 350 or so articles in respect of which complaints had been made, and in regard to which no steps had been taken. Although he did not suggest ill faith anywhere, he pointed out that if notice of objection were given to hundreds of articles, and the cases were not proceeded with, then this might have the effect of holding up the manufacture of the articles concerned in this country, for fear that in the end they might be taken out of the list. There was no need to incur large expense; the parties might quite easily present their own cases, without counsel, and they should stick to the chemical under discussion, because he had found from experience that it was of very little assistance to have so many other things introduced into these inquiries. He remembered two cases distinctly in which the parties had attended personally and had put their points admirably, the whole thing being completed in two hours. The Board of Trade had always said they would not instruct counsel in such cases, and, with regard to opponents, he doubted very much whether they would get permission to be represented by counsel if the other parties were not so represented.

The Meaning of "Synthesis"

Referring later to his decision in the camphor case as to the meaning of "synthesis," the Referee said that one got into a great deal of difficulty in these cases. There was a restricted view and also a wider view. He would not be obstinate and adhere to a view in one case which had been accepted in another if he thought it should be reconsidered; he could only decide these things on the evidence. On the fine-chemical point the Referee said that if, after reading the evidence, he came to the conclusion that formaldehyde had been definitely treated as a fine chemical in the trade that would settle the matter. But supposing one came to the conclusion, on the evidence, that trade usage was silent on the point, then one was driven to apply other tests. The more one knew of the trade the more one saw how little the trade had used the expression "fine." He had never been so impressed as he had been in this case with the feeling that the people who decided upon trade usage knew very little about the chemical, as to whether it was heavy or fine. They had no idea how it was made, and yet they were the people who determined the classification; he had never felt so impressed with the feeling that it ought to be regarded as a fine chemical, and that those who had said it was not were all wrong. He felt that this was one of the things which the Act was intended to protect, and yet he was very much impressed with Mr. Swan's point that it was difficult to say there was any proof here that anyone ever did regard it as a fine chemical.

The hearing was concluded, and the Referee will give his decision later.

Soap and Chemical Dealer's Failure

ISADORE ALEXANDER POLIAKOFF, merchant, 30-32, Ludgate Hill, London, and late of 123, Cannon Street, dealer in soap and chemicals, attended before Mr. Registrar Mellor at the London Bankruptcy Court on Tuesday for his public examination. His statement of affairs showed liabilities £24,030, of which £19,230 are expected to rank, and estimated assets £7,510.

In reply to the Official Receiver, the debtor said that the business, which at one time was very successful, was that of importers of general produce and exporters of soap and chemicals. At the date of the armistice the company held heavy stocks and it had made forward contracts on which heavy losses were sustained, and in November, 1919, a voluntary liquidator was appointed. In January, 1920, he registered the British Commercial Overseas Company, Ltd., for the purpose of carrying on business as merchants at 123, Cannon Street, London. In the following May he began business as a merchant at the same address and traded there until March, 1921, incurring during that period the majority of his present debts. From the petitioning creditor he bought salt cake, and in March, 1921, the company mentioned took over all his business interests and he became the governing director. He attributed his insolvency to loss in trading owing to the slump, to bad debts, to loss owing to the fluctuation of exchange rates, and to heavy costs of litigation. The examination was adjourned in order that the debtor might lodge further accounts.

New Zealand Oil Wells

THERE are abundant indications of the presence of petroleum in New Zealand, and a considerable amount of local and London capital has been expended in exploiting them, but so far with little financial return, states a correspondent in the *Times Trade Supplement*.

The presence of oil has been definitely established in the tertiary rocks in the Poverty Bay, Taranaki, and Hawkes Bay districts in the North Island, and at Kotuku on the West Coast of the South Island. Great hopes were entertained of the Taranaki wells, which were situated within a few yards of the sea at the port of New Plymouth. These are now definitely closed, and a refinery that was erected there has been dismantled and taken to the Persian oilfields, where it has been re-erected for the Anglo-Persian Company. The Taranaki Oil Wells, a London company, was successful in producing sufficient crude oil to earn the Dominion Government's bonus of £5,000, but the wells are now closed.

Chemical Matters in Parliament

Pitch Cancer

Mr. D. Williams (House of Commons, June 28) asked the President of the Board of Trade the number of men certified as suffering from pitch cancer by those engaged in the manufacture of pitch and patent fuel during the past five years; how many had died of this disease during the same period; and how many employed in those industries had died in the same period from other forms of cancer; and whether, in view of the growth of this diease, he would make it obligatory on the manufacturers of these commodities to use mechanical appliances in the handling of pitch wherever possible. Mr. Bridgeman (the Home Secretary) said that the numbers of men reported to the factory department as suffering from this disease during the five years 1918 to 1922 were as follows. In 1918, 23; in 1919, 10; in 1920, 25; in 1921, 18, and in 1922, 15. No fatal cases were reported in 1918 to 1920; two were reported in 1921, and one in 1922. The figures did not indicate any growth in the incidence of this disease, and no information was available to show the number of deaths in these industries during the period in question from other forms of cancer. As regards mechanical appliances, these were generally used where practicable, but that they could only be used in a few operations.

Surplus War Stores

Mr. C. Wilson (House of Commons, June 28) asked the Financial Secretary to the Treasury whether, seeing that the Disposal and Liquidation Commission has repeatedly declined to entertain private negotiations for the sale of goods on the ground that the custom of Government Departments had been to maintain the principle of public tender, he could state why this principle was departed from, with the approval of the Treasury, in the case of the contracts arranged with Messrs. George Cohen, Sons, and Co., of London, and W. G. Armstrong, Whitworth and Co., Ltd.; who initiated the proposals made to the Board by each of these firms; and whether any other firms had had the opportunity of making proposals. Sir W. Joynson-Hicks referred Mr. Wilson to the answer he gave to Mr. Emlyn-Jones on June 5 last, and added that the preliminary proposals to the Disposal and Liquidation Commission were made by accredited representatives of the firms in question.

Manufacturing Chemists' Failure

A MEETING of the creditors and shareholders of Preston, Hull and Co., Ltd., manufacturing chemists and druggists, 112, High Holborn, London, was held on Friday, June 29, in London, Mr. G. Digby Pepys, Official Receiver, presiding.

The Chairman said that the winding-up order was made on the petition of the Official Receiver as provisional liquidator of the C. P. Preston Co., Ltd., which was allied to the company and was a creditor for £3,535. The company was registered on January 14, 1920, with a nominal capital of £12,500 divided into 10,000 participating preference shares of £1 each and 10,000 ordinary shares of 5s. each, and was promoted by Mr. Colvin Percy Preston to acquire as a going concern the business of manufacturing druggists and chemists conducted under the style of the Coal By-Products Co., together with trade marks, certain processes for the manufacture of articles called "spots" and "fumo-taracine," the plant, office furniture, and benefit of the tenancy agreement relating to the premises in High Holborn, etc. The trading account for the year ending December 31, 1920, disclosed a gross profit of £7,753, but a net loss of £764, the sales for the year amounting to £11,768. The profit and loss account included £1,978 for advertising. During the ensuing twelve months the gross profits fell to £3,897, while there was a net loss on the trading of £7,795, the profit and loss account including salaries £4,456. The statement of the company's affairs filed in the liquidation disclosed £7,444 due to 54 unsecured creditors, as against which the assets were valued at £378. The company had been making a profit from "spots," and the receiver thought that but for the launching out in certain branch establishments it would have been a success.

As a result of the meeting the liquidation remained in the hands of the Official Receiver.

From Week to Week

DR. T. M. BRIDE has been appointed chemical lecturer in ophthalmology at Manchester University.

MR. T. H. W. IDRIS, chairman of the Idris Table Waters Co., and Mrs. Idris celebrated their golden wedding on Tuesday.

MR. R. A. MCCANCE, B.A., of Sidney Sussex College, Cambridge, has been awarded a bachelor scholarship of £100 for research in bio-chemistry.

THE CANADIAN GOVERNMENT has unanimously voted an annuity of $7,500 (£1,500) to Dr. Banting, the discoverer of the Insulin treatment of diabetes to enable him to continue his research work.

THE BRITISH INDUSTRIES FAIR, London, organised by the Department of Overseas Trade, will be held at the White City at the end of April and beginning of May next year, instead of in February as hitherto.

OWING TO THE INCREASE in the work of the Rothamsted Experimental Station, it has been decided to appoint an assistant director, and Dr. B. A. Keen, head of the Physics Department, has been selected for this position.

THE ESSEX COUNTY COUNCIL have appointed Mr. S. J. Watson, M.Sc., assistant lecturer in agricultural chemistry at the East Anglian Institute of Agriculture, Chelmsford, at a salary of £350 per annum, rising by annual increments of £20 to £450.

MR. JOHN ROBERTS, Oswestry, has been successful in gaining one of the six apprenticeship scholarships of the value of £100 per annum, tenable at Nottingham University, offered by Messrs. Boots, chemists, to enable successful apprentices to pursue their studies in chemistry.

PROMISES OF DONATIONS totalling over £500 have been received by the Institution of the Rubber Industry in aid of a fund to extend the Institution lectures to various provincial centres, to establish a technical entrance examination with a diploma, and to publish papers and other literature relating to the industry.

A GENERAL MEETING of the members of the Royal Institution was held on Monday, July 2, Sir James Crichton-Browne, treasurer and vice-president, in the chair. The death of Sir James Reid was reported to the meeting, and a resolution of condolence with the family was passed. Mr. R. N. Lennox was elected a member.

THE SIR CLEMENT ROYDS memorial scholarship in chemistry at the University of Manchester, of the value of £300, is being offered to candidates born or resident in the county of Lancaster, preference being given to the county borough of Rochdale. Further particulars are obtainable from the Internal Registrar, to whom applications must be sent by, at latest, July 14.

A SPECIAL COMMITTEE of the London County Council recommends the revision and codification in one self-contained statute of the existing enactments relating to smoke pollution and the empowering of local authorities to take measures to encourage the substitution for domestic cooking of electric and gas-heating appliances for coal-burning grates and the adoption of improved forms of coal fire grates.

A SUCCESSFUL CLAIM for damages under the Workmen's Compensation Act was made on Monday in the Mayor's City of London Court by a printer employed by W. P. Griffiths and Sons, Ltd., Old Bailey, London, on the ground that he was incapacitated as a result of lead-poisoning derived from working with printing ink containing lead. An award of 35s. per week was made, until further order.

ON TUESDAY in the Companies Court, High Court of Justice, Mr. Justice P. O. Lawrence sanctioned a petition by Fullers Earth Union, Ltd., for a scheme of arrangement between the company and its members, which involved the reorganisation of its capital. Mr. Hecksher, for the company, stated that the present capital of the company was £98,331. Under the proposed arrangement the capital would be increased to £122,853 10s.

THE HONOURS LIST issued in connection with the King's Birthday includes the following names:—Sir Arthur John Dorman, managing director of Dorman, Long and Co., Ltd., associated with Bell Brothers, Ltd., producers of open-hearth steel from Cleveland iron, to be a baronet; and Mr. Ernest Tom Neathercoat, president of the Pharmaceutical Society, in recognition of his services in connection with Dangerous Drugs Regulation to be C.B.E.

SIR H. WARDEN CHILCOTT, M.P. for Walton, at Liverpool, on Saturday, June 30, advocated the establishment of a great Government military chemistry department. The next war, he said, would be one of material rather than personnel, and destructive gases had reached only the experimental stage. The nation which produced the most brilliant chemists would be capable of wiping out the inhabitants of vast tracts of country without loss of life to herself.

THE COMMISSIONERS for the Exhibition of 1851 announce that senior studentships for 1923 have been awarded to Dr. W. Davies, demonstrator and lecturer in chemistry at the University of Oxford; Mr. J. H. Quastel, research student in bio-chemistry at the University of Cambridge; and Mr. D. Stockdale, research student in metallurgy in the Goldsmiths' laboratory at the University of Cambridge and demonstrator in the University Chemical Laboratory.

ATTENTION has been drawn in the House of Commons to the fact that in the Board of Trade Returns from April 1, Ireland has been treated as a "foreign" country, and that the value of the returns for purposes of comparison has been affected by the change. Sir Philip Lloyd-Greame states that, though unable to say to what extent the statistics of exports and imports have been affected, the quarterly returns will give the information in practically complete form.

AN OIL-SEPARATOR, designed to separate oil from water on board ship, in view of the fact that the discharge of oil from ships is illegal near shore, was demonstrated recently at Gateshead-on-Tyne by Messrs. R. C. Knight and H. D. Smith, the inventors, at the works of the Redheugh Iron and Steel Co., Ltd. A full working installation of the separator was made for the purposes of the demonstration of a type with a capacity of 15 to 20 tons per hour, varying with the specific gravity of the oil which is dealt with.

AT THE LAST MEETING of the Executive Committee of the British Chemical and Dyestuffs Traders' Association the following firms were elected members:—Fredk. Boehm, Ltd., 15-17, Jewry Street, London; Clifford Christopherson and Co., 6, Lloyd's Avenue, London; Petri Brothers, Ltd., 24, Minories, London; L. J. Pointing, St. Mary's Chare, Hexham-on-Tyne; Price, Stutfield and Co., Ltd., 6, Fenchurch Buildings, London; J. Sherman & Co., Ltd., Downham Mills, Tottenham, London; and F. E. Symonds and Co., 9, Mincing Lane, London.

PRICES FOR sulphate of ammonia for home agricultural use for July and August delivery have been fixed by the British Sulphate of Ammonia Federation, Ltd., as follows:—£14 15s. per ton for neutral quality in fine friable condition, free from lumps, basis 25¾ per cent. ammonia, delivered to consumers nearest station or wharf in Great Britain, for prompt cash payment, in lots of 4 tons and upwards. Limited quantities of ordinary quality will be available in some districts, and will be sold at 23s. per ton less than the above prices, basis 25¼ per cent. ammonia.

AT A MEETING of the Faraday Society held in London on Monday, papers were read by Messrs. F. G. Tryhorn and S. C. Blactin on "The Formation of Anomalous Liesegang Bands;" by Dr. J. B. Firth, F.I.C., on "The Determination of the Density of Charcoal by Displacement of Liquids"; by Dr. Allan Ferguson, M.A., on "A Relation between Surface Tension and Density"; and by Mr. Ulick R. Evans on "The Law of Definite Proportions in the Light of Modern Research." The last paper dealt mainly with certain conclusions reached by the author as a result of work on solid solutions of alloys, etc.

PROFESSOR F. GOWLAND HOPKINS, F.R.S., Professor fo Bio-Chemistry in the University of Cambridge, delivered the first of a series of two lectures in the Physiology Classroom of Edinburgh University last week, his subject being "the Present Position of the Vitamin Question." Principal Sir Alfred Ewing presided. Professor Hopkins said that in the 19th century physiologists had been principally engaged in regarding foodstuffs as sources of energy, but it was in the present century that the quality of foodstuffs had been considered. In Scotland particularly some scepticism as to the existence of vitamins had been expressed, but he held that there was no doubt as to the objective existence of vitamins. He expressed the hope that soon one of the vitamins would be obtained in a pure condition.

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198,385. Formic Acid, Manufacture and Utilisation of. H. Nielsen, 13, Firs Avenue, Muswell Hill, London, and B. Laing, Abdale House, Hatfield, Herts. Application date, December 3, 1921.

The object is to simplify the production of formic acid, and to use it for the conversion or cracking of liquid hydrocarbons, or to obtain an increased yield of condensible hydrocarbons during the distillation of coal, lignite, peat, shale, wood, etc. Free formic acid is produced directly from methane in the presence of a metallic oxide catalyst, or from carbon monoxide and water vapour in the presence of a similar catalyst. In passing methane over the catalyst it becomes converted into carbon monoxide, hydrogen and water, and the carbon monoxide combines with the water to produce formic acid. The catalyst is preferably an activated copper suboxide. An excess of copper sulphate solution is treated with metallic zinc, and the copper precipitate washed and boiled to remove traces of zinc, and then dried and heated in air. Activated copper precipitates obtained by other methods may also be used. Pure methane is made by the dry distillation of sodium acetate and soda lye in excess and is then passed over the copper oxide catalyst, which supplies the oxygen for the oxidation and acts as an oxygen carrier. The reaction is endothermic, and requires a temperature of 250°–800° C. If the starting material is carbon monoxide or a gas containing it, water vapour must be added in addition. After a short time the copper suboxide loses some oxygen and becomes inactive. It may be regenerated by moistening with a very weak zinc sulph te solution, and then washing, drying and roasting. Another feature of the invention comprises the passage of free formic acid vapour produced as above through carbonaceous materials which are undergoing distillation in a retort. The hydrogen which was produced in the formic acid reaction facilitates the production of condensible hydrocarbons, and the formic acid is decomposed with liberation of nascent hydrogen. The heat necessary for the endothermic formic acid reaction may be obtained by using the sensible heat of the carbon monoxide or methane obtained from an adjacent producer. Part of the produced gas obtained may be used for conversion into formic acid, and part may be passed directly into the retort to heat the carbonaceous material. The process is also applicable for the conversion of liquid hydrocarbons by vaporising them and treating with free formic acid.

198,387. Separation of Materials by Centrifugal Apparatus. Plauson's (Parent Co.), Ltd., 17, Waterloo Place, London, S.W.1, from H. Plauson, 26, Jarrestrasse, Hamburg, Germany. Application date, January 3, 1922.

A hollow vertical shaft 1 carries a centrifugal drum composed of a large number of annular wire nets or sheets 3, which are stamped or grooved or perforated as shown. Consecutive sheets are arranged with the perforations at right angles. The drum carries conical metal rings 4, having their conical surfaces provided with longitudinal slits 5 and small radial grooves. Alternatively these rings 4 may project horizontally. The pores of the drum may be adjusted to the desired fineness by compressing the plates by a screw 7. The hollow shaft opens into the drum at 11, and into a closed container 12 at 13. The drum is surrounded by vertical screens 17, 17a, as shown. When used for separating liquids and gases, the mixture is introduced through a nozzle 18, and the expansion causes an increased velocity which directs the heavier portion to the groove 19. The remainder passes upwards through the slots 5, and the heavier portion then passes through an opening 21 to an outlet 23. The gases or lighter boiling portions are drawn through the filter 3 by means of a vacuum maintained in the vessel 12. Heavier gases are withdrawn through the pipe 28. The material may be subjected to the action of chemical reagents introduced through the pipe 25 before being subjected to centrifugal action. The bores in the drum 3 are preferably filled with cement, gypsum, colloidal silicic acid, or a mixture of rubber, cellulose ester, etc., so that the pores are of a fineness of about 0·0001 mm. The apparatus is adapted for the separation of substances of different volatility, or for the separation of gases such as oxygen and nitrogen. The apparatus is applicable for separating a mixture of alcohol and ether, preferably at a temperature of about 25° C., and a vacuum of about 40 cm., under which conditions the ether is much more volatile than the alcohol. A mixture of crude naphtha and benzine may be

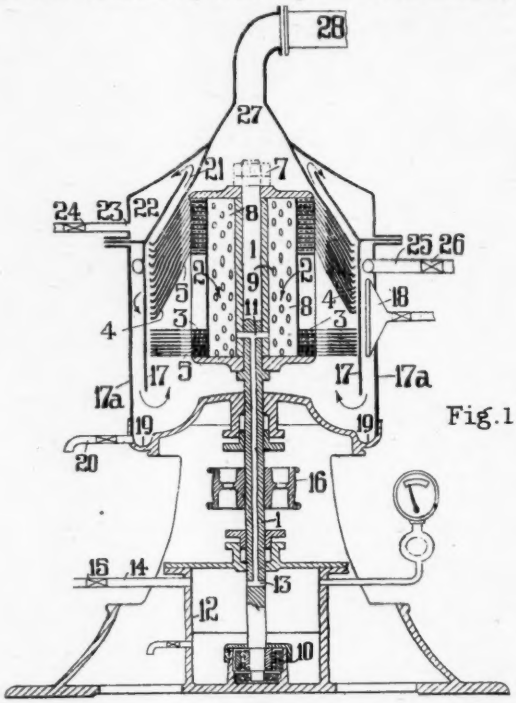


Fig.1

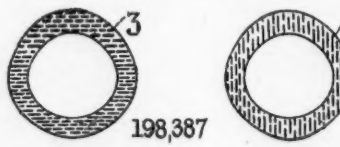


Fig.2.

Fig.3.

Fig.4.

separated similarly, and also gases such as flue gas, water gas, and gases containing sulphur, in which case the sulphur may be removed by introducing a solution of a lead salt. Suspended matter may be removed from effluent water and from liquids such as starch and sugar solutions. If the apparatus is insulated and given a high-tension electric charge, gaseous substances may be separated when one is electro-positive and the other is electro-negative. Modifications of this apparatus are described which are particularly adapted for separating solids and liquids, and also in which means are provided for continuously discharging solid material from the internal surface of the rotor.

198,398. Azo Dyestuffs, Manufacture of New. W. Carpmael, London. From Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. Application date, January 31, 1922.

These new mixed disazo dyestuffs are obtained from one molecular proportion of the tetrazo compound of the 4 : 4′-diamino-diphenyl-3 : 3′-dicarboxylic acid combined with one molecular proportion of an azo dyestuff component containing a sulphonic or a carboxylic group, or two hydroxy or two amino groups, or one hydroxy and one amino group, or a hydroxy group in conjunction with the CH_2CO group of the aceto-acetic anilide or of the pyrazolone, and one molecular proportion of a pyrazolone- or aceto-acetic-anilide compound. An example is given of the production of the dyestuff obtained from 4 : 4′-diamino-diphenyl-3 : 3′-dicarboxylic acid, com-

bined with 1-meta-amino-phenyl-3-methyl-5-pyrazolone and meta-amino-phenol. Other examples are also given. The dyed material may afterwards be treated on the fibre with copper or vanadium salts.

198,415. VAT DYESTUFFS, MANUFACTURE OF NEW. W. Carpmael, London. From Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. Application date, February 27, 1922.

These vat dyestuffs are obtained by condensing 2 : 1-naphtho-oxythiophene or a nucleus substitution product such as a halogenated derivative, with isatin or a substituted isatin such as 5 : 7-dihalogenated isatin or a cyclic orthodiketone containing two or more nuclei such as acenaphthenequinone, aceanthrenequinone, indandione (1 : 2-diketohydrindene), etc. β-naphthisatin is not suitable, and is excluded. An example is given.

198,446. MACHINES FOR CENTRIFUGALLY SEPARATING SOLIDS FROM LIQUIDS. G. Johnston, Gala Bank, Urmston, Manchester. Application date, March 7, 1922.

This apparatus is for automatically and periodically discharging solids of lower specific gravity than the liquid portion of a mixture. The rotating centrifugal separator is provided on its periphery with cylinders which are arranged to slide in radial guides, and are connected to the main casing by flexible annular diaphragms. The outer end of each cylinder is formed as a valve seating which is adapted to co-operate with a valve mounted on a radial spindle which is secured at its inner end to the casing. The sliding cylinder is balanced in regard to its radial movement by means of weights in such a way that when the quantity of solid matter collected in the cylinder exceeds a predetermined amount, the cylinder is caused to move outwards so that the valve opens and the solid matter is discharged into a surrounding annular trough.

198,462. QUINOLINE AND QUINOLINE DERIVATIVES OR COMPOUNDS, PREPARATION OF. J. A. Gardner and M. Williams, Physiological Laboratory, University of London, South Kensington, London, S.W.7. Application date, March 13, 1922.

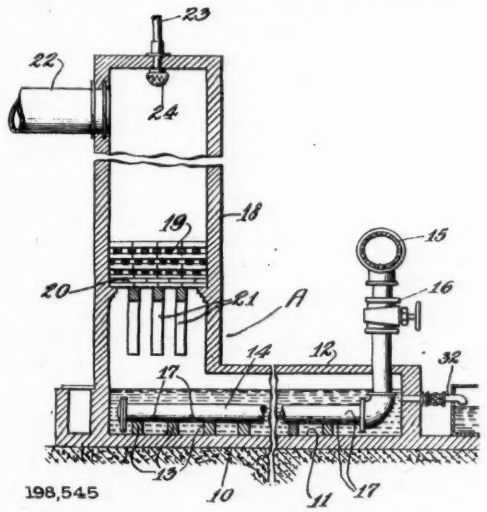
In this invention chloropicrin is used as the oxidising agent in the production of quinoline and its derivatives. Chloropicrin slowly decomposes at its boiling point into phosgene and nitrosyl chloride. In the production of quinoline derivatives by the Skraup reaction or the Döbner and von Miller reaction, if chloropicrin is used instead of nitrobenzene, the reaction is less violent, a better yield is obtained, and the purification is rendered simpler owing to the smaller quantity of resinous by-products. To obtain quinoline, a mixture of aniline 190 parts and concentrated sulphuric acid 500 parts is cooled, and glycerol 600 parts is added while stirring. Chloropicrin 159 parts is then added gradually without evolution of heat, and the mixture is heated under a reflux condenser. After about 15 hours the mixture thickens and the reaction is complete in about 19 hours. The mixture is then cooled, and diluted with water, and a small excess of chloropicrin distilled over in steam. The solution is made alkaline with sodium hydrate and redistilled with steam. The oil emulsion distillate is diazotised to decompose unchanged aniline. Sodium hydrate is again added, the quinoline again redistilled, and the emulsion extracted with ether. This solution is dried over anhydrous sodium sulphate, the ether distilled off, and the quinoline fractionally distilled. A yield of 85 grams is obtained. Detailed examples are given of the production of several derivatives of quinoline.

198,530. COAL GAS, MANUFACTURE OF. The Underfeed Stoker Co., Ltd., and S. McEwen, Coventry House, South Place, London, E.C.2. Application date, April 26, 1922.

The object is to manufacture coal gas from pulverised coal under such conditions that finely sub-divided coke is obtained, while part of the heat of combustion of the coke is used for the internal heating of the retort, and the remainder is used for generation of steam. The heat of combustion of the coke is used to heat the coal gas produced in a recuperator, and the coal gas is then passed at a temperature of 2000 F. into the retort. The pulverised coal is carbonised by causing it to fall in a shower through a tower through which the hot coal gas is passed upwards. The sub-divided coke obtained is burnt in a furnace, and the combustion products used to heat the coal gas. The descending pulverised coal is subjected to low temperature carbonisation in the upper part of the tower, and to high temperature carbonisation in the lower part.

198,545. SLUDGE ACIDS, TREATMENT OF. I. Hechenbleikner, Charlotte, N.C., U.S.A.; and T. C. Oliver, 50, East 42nd Street, New York. Application date, May 13, 1922.

The process is for concentrating and purifying sludge acids used in refining petroleum oils or their fractional distillates. Such acid is usually about 50° Bé., and is usually treated with steam and water to recover oil, which reduces it to about 30° Bé. Such acid may be concentrated to 60° Bé. by evaporation, the vapour driven off, being mainly steam. In concentrating further to 66° Bé, a relatively large proportion of acid is driven off, which necessitates the use of scrubbing towers for its recovery. In the present process, the sludge



198,545

acid is heated internally by blowing air through it. In the initial stage the acid is concentrated to a strength which is below that at which the contained hydrocarbons carbonise—*i.e.*, below 57° Bé. Under these conditions, the hydrocarbons are volatilised or oxidised, and driven off without charring. Further heating of the acid to complete the concentration may then take place without contamination with carbon, since the hydrocarbons have been driven off. The chamber 12 contains a horizontal pipe 14 perforated at 17 on its under side, and supported on blocks 13 of acid-resisting material. Hot air is introduced through a pipe 15 and valve 16, so that it is injected into the acid through perforations 17 to heat and agitate it. The acid is introduced through a pipe 23 and sprayer 24 into the tower 18, containing brick checkerwork 19. The acid is thus preheated by the hot gases flowing upwards through the chamber 18 to the outlet 22. In the case of sludge acid containing tarry matter, the brickwork 19 may be omitted. During this treatment the acid is kept at a temperature of 220°–320° F., and the strength below that at which coking or charring of the hydrocarbons takes place. The temperature is regulated by varying the rate of inflow of the acid. The acid then passes through pipe 32 to a similar concentrating apparatus which is maintained at 400°–430° F., in which the concentration is increased to about 66° Bé.

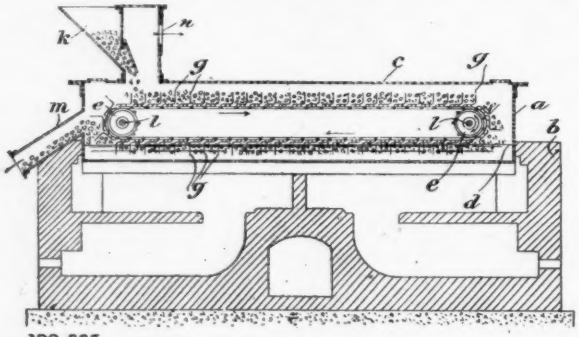
198,576. METAL DEHYDE, MANUFACTURE OR PREPARATION OF. J. Y. Johnson, London. From Elektrizitätswerk Lonza, Gampel and Basle, Switzerland. Application date, June 28, 1922.

When acetaldehyde is treated with a catalyst such as an acid, calcium chloride, or free halogens, metaldehyde is produced but only in small quantities, so that at the final equilibrium point the mixture contains over 90 per cent. of paraldehyde and acetaldehyde. The metaldehyde only appears in solid form for a limited period during the transformation, during which it must be removed, but not more than 0·8 grams of metaldehyde can thus be recovered from 100 grams of acealdehyde. It is now found that bromides of alkali metals

and alkaline-earth metals such as lithium bromide and calcium bromide are much more efficient catalysts, giving a yield of about 6 per cent. of metaldehyde in the solid form. These catalysts act irregularly and sometimes too rapidly, but this may be avoided if a small quantity of hydrobromic or hydrochloric acid or other acid compound such as ferric chloride, aluminium chloride, sulphur haloids, or antimony haloids, are added. The acetaldehyde is cooled to about 0° C., and treated with a small fraction of 1 per cent. of the catalyst, when metaldehyde separates. The use of a small quantity of acid also improves the catalytic action of calcium chloride and other haloids of alkali or alkaline earth metals and also the haloids of titanium, aluminium, zirconium, thorium, cerium, lanthanum, yttrium and ytterbium.

198,625. Heat Treatment by Means of a Bath of Molten Metal, Apparatus for. Thermal, Industrial and Chemical (T.I.C.) Research Co., Ltd., and Sir A. M. Duckham, 52, Grosvenor Gardens, London, S.W.1. Application date, December 30, 1922.

In apparatus for subjecting materials to heat treatment in a bath of molten metal, the material has been carried below the surface of the molten metal by an endless chain or band passing over drums in a closed vessel. If the lower run of the chain passes through the molten metal, it is liable to cause it



to solidify, thus clogging the chain and abstracting heat which is radiated from the upper run of the chain. These disadvantages may be avoided by keeping the lower run clear of the molten metal and conveying the material through it by means of thin metal plates projecting from the chain. The metal bath *a* is provided with a gas-tight cover *c*, and set in a furnace *b*. The level of the metal, *e.g.*, lead, is indicated at *d*. The chain runs over sprocket wheels *e*, and carries thin metal plates *g* which project from the lower run into the metal. The chain itself is just above the metal surface. The plates are bent at right angles as shown, so that two adjacent plates constitute a bucket which receives the material to be treated from the hopper *k*. The material is conveyed through the metal by the plates, and finally discharged through the outlet *m*. The sides of the metal plates may be supported on ledges above or below them, on the sides of the tank *a*.

International Specification not yet Accepted

196,924. Vulcanisation of Indiarubber. W. F. Russell, Norwalk, Conn., U.S.A. International Convention date, April 26, 1922.

To assist the vulcanisation of a mixture of indiarubber, sulphur, and zinc, lead, aluminium, or manganese oxide, certain acids are added which promote the solution of the oxide in the rubber. The acids are those whose zinc salts are soluble in hot aromatic hydrocarbons such as benzene or xylene, or in terpene hydrocarbons such as pinene or dipentene. Acids mentioned include monobasic saturated and unsaturated fatty acids, *e.g.*, lauric, palmitic, stearic, oleic, linoleic; aryl derivatives such as phenylacetic, phenylpropionic, cinnamic acids; aromatic monobasic acids such as benzoic and toluic; derivatives such as anisic acid, and acid resinous substances. Accelerators such as urea may also be added, and the additions may be made to the latex, or during the crêpeing operation or in the mill.

Latest Notifications.

199,706. Green dye-stuffs dyeing in reducing baths, and their process of manufacture. Soc. Chimique de la Grande-Paroisse. June 22, 1922.

199,713. Treatment of titanium-nitrogen compounds. Titan Co. Aktieselskabet. June 24, 1922.

199,716. Method of, and apparatus for, fertilising with carbonic acid. Dr. E. Reinau. June 21, 1922.

199,720. Process for manufacturing dinitro-perylene-quinone. H. Pereira. June 20, 1922.

199,721. Process of manufacturing amino-perylene-quinones. H. Pereira. June 20, 1922.

199,722. Process for manufacturing perylene vat dyes. H. Pereira. June 20, 1922.

199,729. Methods of treating silk. Carpenter Chemical Co. June 21, 1922.

199,743. Sulphonation or sulphuration of fatty substances of animal origin. P. L. Guilleminot. June 26, 1922.

Specifications Accepted, with Date of Application

174,915. Vulcanising rubber, Process for, and products obtained thereby. Naugatuck Chemical Co. February 1, 1921.

178,113. Lubricating oils, Manufacture of. E. Eichwald, H. Vogel and P. Hardt. April 8, 1921.

182,112. Ethylidene-glycol and vinyl alcohol, Manufacture of esters and ethers of. Consortium für Elektrochemische Industrie Ges. June 23, 1921.

186,899. Methane, Manufacture of. Farbwerke vorm. Meister, Lucius and Brüning. October 4, 1921.

191,028. Hydroxylated aliphatic arsinic acids, Manufacture of. Etablissements Poulenc Frères and C. Oechslin. December 29, 1921.

192,392. Acetone from acetylene, Manufacture of. Elektrizitätswerk Lonza. January 26, 1922.

194,663. Magnesium carbonate, Process for the preparation of, from magnesium carbonates and magnesium silicates containing calcium. A. Hambloch. March 8, 1922.

199,051. Concentration of ores and minerals. E. C. R. Marks (*Eureka Metallurgical Co.*). December 10, 1921.

199,056. Cement, Processes and plant for the manufacture of. T. Rigby. December 19, 1921.

199,073. Montan wax, Chlorination of. H. W. K. Jennings (*H. Stinnes, Firm of*). February 16, 1922.

199,091. Aromatic carbonyl compounds containing trivalent arsenic, Process for the preparation of new. O. Margulies. March 10, 1922.

199,092. Organic arsenic compounds, Process for the preparation of new derivatives of. O. Margulies. March 10, 1922.

199,093. Arsenoxides and arsenobenzols, Process for the preparation of new. O. Margulies. March 10, 1922.

199,095. Rubber, Process for the treatment of. F. C. Jones. March 11, 1922.

199,154. Sulphurous acid compounds of isatin anilide or arylides, Process for the production of. C. Stephan. March 20, 1922.

199,210. Evaporating, distilling, heating or cooling fluids, Apparatus for. Blair, Campbell and McLean, Ltd., and A. Blair. May 4, 1922.

Applications for Patents

Badische Anilin- & Soda-Fabrik and Johnson, J. Y. Treatment of cellulose esters for dyeing. 16,458. June 25.

Coley, H. E. Treatment of copper ores. 16,477. June 25.

Colman, D. M., Colman, L. M., and Perry, W. P. Apparatus for distilling carbonaceous material and producing portland-cement clinker. 16,813. June 28.

Farbwerke vorm. Meister, Lucius & Brüning, and Imray, O. Y. Manufacture of derivatives of ethane. 16,587. June 26.

Hallitt, W., Sturgeon, R. A., and Sturgeon Centrifugal Co., Ltd. Centrifugal separators. 16,764. June 28.

Heyl, G. E. Rotary distillation retorts. 16,691. June 27.

Kilby, W. Dyeing cellulose-acetate fibres. 16,532. June 26.

Lewis, G. P. Catalysts. 16,446. June 25.

Ling, A. R. Process for augmenting yield of alcohol in fermentation of amylaceous washes. 16,781. June 28.

Ling, A. R. Process for treating starch for production of maltose, etc. 16,782. June 28.

Masters, C. L. Manufacture of beta naphthol 2 : 3 : 6 and 2 : 6 : 8 disulphonic acids. 16,634. June 27.

Masters, C. L. Manufacture of alpha and beta naphthols. 16,635. June 27.

Techno-Chemical Laboratories, Ltd. Drying. 16,861. June 28.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to* THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

London, July 5, 1923.

THERE has been a fair inquiry during the past week, but actual business has been rather slower. Prices, however, for spot consignments remain firm.

A considerable amount of export inquiry is being received, but business in this section is also slow, owing, no doubt, to the violent fluctuations in exchanges.

General Chemicals

ACETONE continues in good request with market firm.

ACID, ACETIC, has met with good inquiry and there is not much on the spot.

ACID, CITRIC, has been in slightly better demand although the price is as yet unchanged.

ACID, FORMIC, unchanged.

ACID, LACTIC, has been inquired for and price is firmer with stocks extremely light.

BARIUM CHLORIDE is uneasy with very little business passing.

BLEACHING POWDER is requested on export account.

CREAM OF TARTAR.—Unchanged.

FORMALDEHYDE is higher in price with practically no stocks available. The forward position is extremely firm and a further advance is probable.

LEAD ACETATE maintains its firm position and stocks are not heavy.

LITHOPONE.—Firm with moderate inquiry.

MAGNESIUM CHLORIDE.—Lower and in plentiful supply.

CAUSTIC POTASH in small demand, price unchanged.

POTASSIUM PRUSSIATE.—Price seems to have reached bottom for the time being and more inquiry is in existence.

SODIUM ACETATE is firmer with supplies extremely limited.

SODIUM BICHROMATE is in good demand at English makers' figures who still control this market.

SODIUM NITRITE is in brisk demand and price is firmer.

SODIUM PRUSSIATE.—A few export orders have been booked but the demand is still small.

SODIUM SULPHIDE.—The demand is very limited with price unchanged.

ZINC SALTS.—Unchanged.

Pharmaceutical Chemicals

ACETYL SALICYLIC ACID.—In steady demand.

ACID LACTIC is still quiet. Market slightly easier.

ACID SALICYLIC.—Slow, some holders being inclined to cut prices.

BROMIDES are still very quiet, and in buyers' favour.

COCAINE.—A continued steady, although small, demand is reported.

EUCALYPTUS OIL.—Firm, tendency upwards.

METHYL SALICYLATE easier on the week.

MILK SUGAR.—Steadier. A fair business is reported.

PHENAZONE is still very quiet, price being cut in some directions.

RESORCIN.—Improved inquiry; price unchanged.

Coal Tar Intermediates

Business during the past week has been rather more interesting, and one or two products have shown signs of firming up.

ALPHA NAPHTHOL.—Orders have been booked and the price is very firm with practically no spot material on the market.

ALPHA NAPHTHYLAMINE.—Orders have been booked both on home and export account, and this material is quite a firm spot.

ANILINE OIL AND SALT continue to pass steadily into consumption.

BENZIDINE BASE is steady, and inquiries have been received.

BETA NAPHTHOL is without special feature.

"G" SALT is a small trade.

"H" ACID is firm with no great quantity for immediate supply.

NITRO BENZOL is unchanged.

NAPHTHIONIC ACID.—Some fair orders have been placed.

NAPHTHIONATE OF SODA.—A good inquiry with price firm.

ORTHO NITRO TOLUOL has been inquired for.

PARANITRANILINE is quiet.

"R" SALT is easy but with some small inquiry.

Coal Tar Products

The amount of business placing in coal tar products is no more than moderate, and prices generally have a somewhat easy tendency.

90% BENZOL is still quoted at 1s. 7d. per gallon on rails.

PURE BENZOL has no great demand, and is quoted at 2s. 1d. per gallon in the North, and 2s. 4d. to 2s. 5d. per gallon in London.

CREOSOTE OIL is firm at 8⅜d. to 8½d. per gallon in the north, and 9d. to 9¼d. per gallon in the south.

CRESYLIC ACID is easy, and is worth about 2s. 1d. per gallon for the pale quality 97/99%, while the dark quality 95/97% is quoted at 1s. 10d. per gallon on rails.

SOLVENT NAPHTHA has had rather better inquiry during the week. Supplies are plentiful, and the price remains unchanged at 1s. 4d. per gallon on rails.

HEAVY NAPHTHA is in poor demand, and is worth about 1s. 6d. per gallon on rails.

NAPHTHALENES show no improvement. The lower qualities are plentiful, being worth about £6 10s. to £7 per ton on rails, while the better qualities are worth from £9 to £9 5s. per ton.

PITCH.—The demand for next season is well maintained, and the market has strengthened farther. To-day's quotations are: London, 142s. 6d. to 147s. 6d., f.o.b.; East Coast, 140s. to 142s. 6d., f.o.b.

Sulphate of Ammonia

The market is quiet.

[*Current Market Prices on following pages.*]

Pure Chemicals for Research

BOOTS' PURE DRUG CO., LTD., Nottingham, are now making a speciality of supplying pure chemicals for research purposes, and we have received a list from them containing the names of the products they are in a position to supply. The list contains about a thousand substances, about 90 per cent. of which are either prepared or purified in the company's laboratories at Nottingham. Naturally, the purity of different products varies, but the majority have a figure of at least 98 per cent. It is stated that the list has been issued as a result of the urgent demands and inquiries arising out of an announcement made recently that the firm were in a position to supply pure chemicals.

The Structure of the Atom

THE issue of *Nature* for to-day (July 7) contains a special 16-page supplement in which Professor Niels Bohr, professor of physics in the University of Copenhagen, gives a comprehensive account of the present state of knowledge of the structure of the atom. Professor Bohr has taken a leading part in the development of modern conceptions of atomic structure; and he devotes particular attention in his paper to the interpretation of spectra, and the main features of the properties of atomical elements on considerations of the manner in which an atom can be imagined to be built up by the capture and binding of electrons to the nucleus, one by one

Current Market Prices

General Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride, 90–95%	lb.	0	1	4	to	0	1	5
Acetone oil	ton	90	0	0	to	95	0	0
Acetone, pure	ton	122	10	0	to	125	0	0
Acid, Acetic, glacial, 99–100%	ton	69	0	0	to	70	0	0
Acetic, 80% pure	ton	50	0	0	to	51	0	0
Acetic, 40% pure	ton	25	0	0	to	26	0	0
Arsenic, liquid, 2000 s.g.	ton	88	0	0	to	90	0	0
Boric, commercial	ton	50	0	0	to	55	0	0
Carbolic, cryst. 39–40%	lb.	0	1	8	to	0	1	9
Citric	lb.	0	1	10	to	0	1	10½
Formic, 80%	ton	50	0	0	to	51	0	0
Hydrofluoric	lb.	0	0	7½	to	0	0	8½
Lactic, 50 vol.	ton	41	0	0	to	43	0	0
Lactic, 60 vol.	ton	43	0	0	to	44	0	0
Nitric, 80 Tw.	ton	27	0	0	to	28	0	0
Oxalic	lb.	0	0	6⅛	to	0	0	6½
Phosphoric, 1.5	ton	35	0	0	to	38	0	0
Pyrogallic, cryst.	lb.	0	5	9	to	0	6	0
Salicylic, Technical	lb.	0	1	9	to	0	2	0
Sulphuric, 92–93%	ton	6	0	0	to	7	0	0
Tannic, commercial	lb.	0	2	3	to	0	2	9
Tartaric	lb.	0	1	5	to	0	1	5½
Alum, lump	ton	12	10	0	to	13	0	0
Chrome	ton	28	0	0	to	29	0	0
Alumino ferric	ton	7	0	0	to	7	5	0
Aluminium, sulphate, 14–15%	ton	8	10	0	to	9	0	0
Sulphate, 17–18%	ton	10	10	0	to	11	0	0
Ammonia, anhydrous	lb.	0	1	6	to	0	1	8
.880	ton	32	0	0	to	34	0	0
.920	ton	22	0	0	to	24	0	0
Carbonate	ton	32	15	0			—	
Chloride	ton	50	0	0	to	55	0	0
Muriate (galvanisers)	ton	35	0	0	to	37	10	0
Nitrate (pure)	ton	35	0	0	to	40	0	0
Phosphate	ton	65	0	0	to	68	0	0
Sulphocyanide, commercial 90%	lb.	0	1	1	to	0	1	3
Amyl acetate	ton	175	0	0	to	185	0	0
Arsenic, white powdered	ton	73	0	0	to	75	0	0
Barium, carbonate, Witherite	ton	5	0	0	to	6	0	0
Carbonate, Precip.	ton	15	0	0	to	16	0	0
Chlorate	ton	65	0	0	to	70	0	0
Chloride	ton	15	10	0	to	16	0	0
Nitrate	ton	33	0	0	to	35	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	0	11	to	0	1	0
Bleaching powder, 35–37%	ton	10	10	0	to	11	0	0
Borax crystals	ton	27	0	0	to		—	
Calcium acetate, Brown	ton	11	10	0	to	12	0	0
Grey	ton	19	15	0	to	20	0	0
Carbide	ton	16	0	0	to	17	0	0
Chloride	ton	5	15	0	to	6	0	0
Carbon bisulphide	ton	35	0	0	to	40	0	0
Casein technical	ton	100	0	0	to	105	0	0
Cerium oxalate	lb.	0	3	0	to	0	3	6
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb.	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	1	to	0	1	2
Sulphate	ton	27	0	0	to	28	0	0
Cream Tartar, 98–100%	ton	97	10	0	to	100	0	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	98	0	0	to	100	0	0
Formusol (Rongalite)	lb.	0	2	1	to	0	2	2
Glauber salts, commercial	ton	4	10	0	to	5	0	0
Glycerin crude	ton	65	0	0	to	67	10	0
Hydrogen peroxide, 12 vols.	gal	0	2	2	to	0	2	3
Iron perchloride	ton	18	0	0	to	20	0	0
Sulphate (Copperas)	ton	3	10	0	to	4	0	0
Lead acetate, white	ton	43	0	0	to	45	0	0
Carbonate (White Lead)	ton	45	0	0	to	48	0	0
Nitrate	ton	44	10	0	to	45	0	0
Litharge	ton	37	0	0	to	39	0	0
Lithophone, 30%	ton	22	10	0	to	23	0	0
Magnesium chloride	ton	4	5	0	to	4	10	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	6	10	0	to	7	0	0
Sulphate (Druggists')	ton	10	0	0	to	11	0	0
Manganese Borate, commercial	ton	65	0	0	to	75	0	0
Sulphate	ton	50	0	0	to	55	0	0
Methyl acetone	ton	78	0	0	to	80	0	0
Alcohol, 1% acetone	ton	105	0	0	to	110	0	0
Nickel sulphate, single salt	ton	39	0	0	to	40	0	0
Ammonium sulphate, double salt	ton	39	0	0	to	40	0	0
Potash, Caustic	ton	35	0	0	to	36	0	0
Potassium bichromate	lb.	0	0	5¾	to	0	0	6
Carbonate, 90%	ton	31	0	0	to	32	0	0
Chloride, 80%	ton	9	0	0	to	10	0	0
Chlorate	lb.	0	0	4	to	0	0	4½
Metabisulphite, 50–52%	ton	75	0	0	to	80	0	0
Nitrate, refined	ton	43	0	0	to	45	0	0
Permanganate	lb.	0	0	10½	to	0	0	11
Prussiate, red	lb.	0	3	3	to	0	3	6
Prussiate, yellow	lb.	0	1	4	to	0	1	4½
Sulphate, 90%	ton	10	10	0	to	11	0	0
Salammoniac, firsts	cwt.	3	3	0	to		—	
Seconds	cwt.	3	0	0	to		—	
Sodium acetate	ton	25	0	0	to	25	10	0
Arsenate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	4½	to	0	0	4¾
Bisulphite, 60–62%	ton	21	0	0	to	23	0	0
Chlorate	lb.	0	0	3½	to	0	0	3¾
Caustic, 70%	ton	19	10	0	to	20	0	0
Caustic, 76%	ton	20	10	0	to	21	0	0
Hydrosulphite, powder	lb.	0	1	5	to	0	1	6
Hyposulphite, commercial	ton	10	10	0	to	11	0	0
Nitrite, 96–98%	ton	27	10	0	to	28	0	0
Phosphate, crystal	ton	16	0	0	to	16	10	0
Perborate	lb.	0	1	0	to	0	1	1
Prussiate	lb.	0	0	7¾	to	0	0	8
Sulphide, crystals	ton	10	10	0	to	11	0	0
Sulphide, solid, 60–62 %	ton	16	10	0	to	17	10	0
Sulphite, cryst.	ton	12	10	0	to	13	0	0
Strontium carbonate	ton	50	0	0	to	55	0	0
Nitrate	ton	50	0	0	to	55	0	0
Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Flowers	ton	11	10	0	to	12	10	0
Roll	ton	11	0	0	to	12	0	0
Tartar emetic	lb.	0	1	2	to	0	1	3
Tin perchloride, 33%	lb.	0	1	1	to	0	1	2
Perchloride, solid	lb.	0	1	3	to	0	1	4
Protochloride (tin crystals)	lb.	0	1	4	to	0	1	5
Zinc chloride 102° Tw.	ton	20	0	0	to	21	0	0
Chloride, solid, 96–98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	50	0	0	to	52	0	0
Dust, 90%	ton	50	0	0	to	55	0	0
Sulphate	ton	16	0	0	to	17	0	0

Pharmaceutical Chemicals

Acetyl salicylic acid	lb.	0	3	3	to	0	3	6
Acetanilid	lb.	0	1	6	to	0	1	9
Acid, Gallic, pure	lb.	0	3	0	to	0	3	3
Lactic, 1.21	lb.	0	2	0	to	0	2	6
Salicylic, B.P.	lb.	0	2	1	to	0	2	3
Tannic, leviss.	lb.	0	3	3	to	0	3	6
Amidol	lb.	0	7	9	to	0	8	3
Amidopyrin	lb.	0	13	0	to	0	13	3
Ammon ichthosulphonate	lb	0	1	11	to	0	2	2
Barbitone	lb.	1	1	0	to	1	3	0
Beta naphthol resublimed	lb.	0	1	9	to	0	2	0
Bromide of ammonia	lb.	0	0	7	to	0	0	7½
Potash	lb.	0	0	6½	to	0	0	7
Soda	lb.	0	0	7¾	to	0	0	8¼
Caffeine, pure	lb.	0	11	0	to	0	11	6
Calcium glycerophosphate	lb.	0	5	9	to	0	6	0
Lactate	lb.	0	1	10	to	0	2	0
Calomel	lb.	0	4	9	to	0	5	0
Chloral hydrate	lb.	0	3	10½	to	0	4	0
Cocaine alkaloid	oz.	0	17	6	to	0	18	0
Hydrochloride	oz.	0	14	9	to	0	15	0
Corrosive sublimate	lb.	0	4	3	to	0	4	6
Eucalyptus oil, B.P. (70–75% eucalyptol)	lb.	0	1	10	to	0	1	11
B.P. (75–80% eucalyptol)	lb.	0	1	11	to	0	2	0
Guaiacol carbonate	lb.	0	8	9	to	0	9	0
Liquid	lb.	0	9	6	to	0	10	0
Pure crystals	lb.	0	9	6	to	0	9	9
Hexamine	lb.	0	3	10	to	0	4	0
Hydroquinone	lb.	0	3	6	to	0	3	9
Lanoline anhydrous	lb.	0	0	7	to	0	0	7½
Lecithin ex ovo	lb.	0	17	6	to	0	19	0
Lithi carbonate	lb.	0	9	6	to	0	10	0
Methyl salicylate	lb.	0	2	3	to	0	2	6
Metol	lb.	0	10	6	to	0	11	6
Milk sugar	cwt.	4	2	6	to	4	5	0
Paraldehyde	lb.	0	1	6	to	0	1	9
Phenacetin	lb.	0	6	4	to	0	6	6
Phenazone	lb.	0	7	3	to	0	7	6
Phenolphthalein	lb.	0	6	6	to	0	6	9
Potassium sulpho guaiacolate	lb.	0	5	0	to	0	5	3
Quinine sulphate, B.P.	oz.	0	2	3			—	

	Per	£	s.	d.		£	s.	d.
Resorcin, medicinal	lb.	0	5	6	to	0	5	9
Salicylate of soda powder	lb.	0	2	6	to	0	2	9
Crystals	lb.	0	2	9	to	0	3	0
Salol	lb.	0	2	9	to	0	3	0
Soda Benzoate	lb.	0	2	6	to	0	2	9
Sulphonal	lb.	0	14	6	to	0	15	0
Terpene hydrate	lb.	0	1	9	to	0	2	0
Theobromine, pure	lb.	0	10	6	to	0	11	0
Soda salicylate	lb.	0	7	9	to	0	8	3
Vanillin	lb.	1	3	6	to	1	4	6

Coal Tar Intermediates, &c.

Alphanaphthol, crude	lb.	0	2	0	to	0	2	3
Refined	lb.	0	2	6	to	0	2	9
Alphanaphthylamine	lb.	0	1	6	to	0	1	7
Aniline oil, drums extra	lb.	0	0	9	to	0	0	9½
Salts	lb.	0	0	9½	to	0	0	10
Anthracene, 40–50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine)	lb.	0	3	0	to	0	3	3
Benzidine, base	lb.	0	4	9	to	0	5	0
Sulphate	lb.	0	3	9	to	0	4	0
Benzoic acid	lb.	0	2	0	to	0	2	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol	lb.	0	1	1	to	0	1	2
Betanaphthylamine, technical	lb.	0	4	0	to	0	4	3
Croceine Acid, 100% basis	lb.	0	3	3	to	0	3	6
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	4	6	to	0	4	9
Dinitrobenzol	lb.	0	1	1	to	0	1	2
Dinitrochlorbenzol	lb.	0	0	11	to	0	1	0
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	4	to	0	1	5
Dinitrophenol	lb.	0	1	6	to	0	1	7
Dimethylaniline	lb.	0	3	0	to	0	3	3
Diphenylamine	lb.	0	3	6	to	0	3	9
H-Acid	lb.	0	5	0	to	0	5	3
Metaphenylenediamine	lb.	0	4	0	to	0	4	3
Monochlorben-ol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	5	9	to	0	6	0
Metatoluylenediamine	lb.	0	4	0	to	0	4	3
Monosulphonic Acid (2.7)	lb.	0	7	6	to	0	8	6
Naphthionic acid, crude	lb.	0	2	3	to	0	2	6
Naphthionate of Soda	lb.	0	2	6	to	0	2	9
Naphthylamin-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Nevill Winther Acid	lb.	0	7	3	to	0	7	9
Nitrobenzol	lb.	0	0	7	to	0	0	8
Nitronaphthalene	lb.	0	0	11½	to	0	1	0
Nitrotoluol	lb.	0	0	8	to	0	0	9
Orthoamidophenol base	lb.	0	12	0	to	0	12	6
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	0	10	to	0	0	11
Orthonitrotoluol	lb.	0	0	3	to	0	0	4
Para-amidophenol, base	lb.	0	8	6	to	0	9	0
Hydrochlor	lb.	0	7	6	to	0	8	0
Paradichlorbenzol	lb.	0	0	6	to	0	0	7
Paranitraniline	lb.	0	2	7	to	0	2	9
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	2	9	to	0	3	0
Paraphenylenediamine, distilled	lb.	0	12	0	to	0	12	6
Paratoluidine	lb.	0	5	9	to	0	6	3
Phthalic anhydride	lb.	0	2	6	to	0	2	9
Resorcin, technical	lb.	0	4	0	to	0	4	3
Sulphanilic acid, crude	lb.	0	0	10	to	0	0	11
Tolidine, base	lb.	0	7	3	to	0	7	9
Mixture	lb.	0	2	6	to	0	2	9

Essential Oils and Synthetics

THESE markets keep very quiet and there is no alteration to report.

ESSENTIAL OILS.		£	s.	d.
Anise	c.i.f. 1/10 spot	0	2	0
Bay		0	12	0
Bergamot		0	12	0
Cajaput		0	3	9
Camphor, white	per cwt.	4	0	0
Brown	„	3	15	0
Cassia	dearer and scarce. c.i.f. 10/6 spot	0	12	0
Cedarwood		0	1	4½
Citronella (Ceylon)	scarce and firm on spot	0	3	9
(Java)	„ „ „	0	4	2
Clove		0	6	9
Eucalyptus	firm	0	1	9
Geranium Bourbon		1	10	0
Lavender		0	12	6
Lavender spike		0	3	0
Lemon		0	3	0
Lemongrass	per oz.	0	0	2½
Lime (distilled)		0	4	0
Orange sweet (Sicilian)		0	13	6
(West Indian)		0	10	6
Palmarosa		0	19	0
Peppermint (American)	firmer	0	13	0
Mint (dementholised Japanese)	dearer	0	7	0
Patchouli		1	12	0
Otto of Rose	per oz.	1	4	0
Rosemary		0	1	8
Sandalwood		1	6	0
Sassafras		0	5	3
Thyme	2/6 to	0	8	0
SYNTHETICS.				
Benzyl acetate		0	3	0
Benzoate		0	3	0
Citral		0	10	0
Coumarine		0	18	6
Heliotropine		0	7	6
Ionone		1	5	0
Linalyl acetate		1	2	6
Methyl salicylate		0	2	6
Musk xylol		0	10	6
Terpeniol		0	3	1

Chile Nitrate Report

HENRY BATH AND SON, LTD., in their half-yearly report on the nitrate position, dated June 30, state that the policy adopted last year by the Producers' Association of fixing a graduated scale of prices rising from 18s. 6d. for July to 20s. 8d. per metric quintal for shipment during the season months appears to have been beneficial to the industry as a whole. The comparatively low price of nitrate for delivery in Chile during the out-of-season months induced early shipments and so avoided congestion during the season months, while at the same time it enabled consumers to cover their spring requirements in advance at lower prices than prevailed during periods of the actual season of consumption. The further benefit of stable prices, which is one of the main objects of a fixed scale, is at present, of course, rather nullified by the vagaries of the Continental exchanges, which contribute an additional element of uncertainty to the fluctuations inherent in freights; still, the fixed prices in Chile help at least to mitigate an evil from which just now there is no escape. A third and not unimportant result of the association's price policy has been the increase in the number of buyers of nitrate for delivery f.a.s. Chile.

Attention is also drawn to the fact that a change in the weight of nitrate bags to a maximum of 80 kilos each, by a Chilean Government decree, is in the process of evolution, and the alteration will presumably take place about a couple of months hence.

New Method of Quoting Alkali Prices

THE firm who act as sales agents in America for the Solvay Process Co. announce that in the future their quotations for soda ash and caustic soda will be made on the basis of 100 lbs. flat; that is, as shipped. This method of quoting will supersede the old practice of quoting soda ash on the basis of 48 per cent. Na_2O and caustic soda on the basis of 60 per cent. Na_2O, and the change is made in the interests of a better understanding between buyer and seller in the marketing of products. This change, coupled with that announced some months ago changing the method of testing soda ash and caustic soda from New York and Liverpool test to actual test, is expected to simplify transactions in these products and remove all confusion as to what has been actually bought and sold.

Ammonia and Magnesia

THE Western Chemical Co. (Paisley), Ltd., Sandyford Works, Paisley, supply the following particulars of present prices for materials manufactured by the company:—

Carbonate of Ammonia, Lump, £32 15s. per ton net.

Light Carbonate of Magnesia (Industrial), £37 to £38 per ton net (dependable on quantity).

Light Calcined Magnesia (Industrial), £82 10s. per ton, less 2½ per cent.

Heavy Calcined Magnesia (Industrial), £28 per ton, less 2½ per cent.

These prices are not subject to frequent change, and any alteration will be announced.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, July 4, 1923.

THE heavy chemical market remains very quiet and there is nothing of interest to record.

Industrial Chemicals

ACID, ACETIC.—Glacial 98/100%, £60 to £69 per ton; 80% pure, £49 to £50 per ton; 80% technical, £44 to £47 per ton, c.i.f. U.K., duty free.

ACID, BORACIC.—Crystal or granulated, £50 per ton; powdered £52 per ton, carriage paid U.K. stations, minimum ton lots.

ACID, CARBOLIC (ICE CRYSTALS).—Remain unchanged at about 1s. 4d. per lb.

ACID, FORMIC 80%.—Quoted £50 per ton, ex-wharf.

ACID, HYDROCHLORIC.—In little demand, 6s. 6d. per carboy, ex works.

ACID, NITRIC, 80°.—£24 per ton, ex-station full truck loads.

ACID, OXALIC.—Unchanged at 6d. per lb.

ACID, SULPHURIC.—144°, £3 15s. per ton; 168°, £7 per ton ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID, TARTARIC.—Offered at 1s. 2¾d., less 5% ex store.

ALUM, LUMP POTASH.—Offered from Continent at £8 15s. per ton, c.i.f. U.K. Spot lots about £11 per ton, ex wharf.

ALUMINA, SULPHATE.—17/18%, £10 10s. per ton; 14/15%, £7 10s. per ton, ex wharf, early delivery.

AMMONIA, ANHYDROUS.—Unchanged at 1s. 5½d. per lb., ex station.

AMMONIA, CARBONATE.—Lump, 4d. per lb. Ground, 4¼d. per lb. delivered.

AMMONIA, LIQUID, 880°.—Unchanged at about 3½d. per lb., ex station, containers extra.

AMMONIA, MURIATE.—Galvanisers grey quality, unchanged at about £32 per ton. Fine white crystals quoted £24 per ton, ex wharf, early delivery.

ARSENIC, WHITE POWDERED.—Unchanged at £76 per ton, ex wharf.

BARIUM CHLORIDE 98/100%.—Offered from Continent at £12 5s. per ton, c.i.f. U.K. Spot lots about £14 to £15 per ton, ex store.

BARYTES.—Finest white English, £5 5s. per ton, ex works.

BLEACHING POWDER.—£11 7s. 6d. per ton, ex station, spot delivery. Contracts, 20s. per ton less.

BORAX.—Granulated, £26 10s. per ton; Crystal, £27 per ton; Powdered, £28 per ton, carriage paid U.K. stations, minimum ton lots.

CALCIUM CHLORIDE.—English makers' price unchanged, £5 12s. 6d. per ton, ex quay or station. Continental make, £4 per ton, c.i.f. U.K.

COPPER SULPHATE.—Quoted £26 10s. less 5% f.o.b. Liverpool. Little inquiry.

COPPERAS, GREEN.—Now offered at £2 2s. 6d. per ton, f.o.b. U.K.

FORMALDEHYDE 40%.—Spot lots now offered at £93 per ton, ex wharf. Quoted £87 per ton, ex wharf, prompt shipment from Continent.

GLAUBER SALTS.—Fine white crystals, £3 15s. per ton, ex store.

LEAD, RED.—English, £41 per ton, carriage paid U.K. stations. Continental material, about £36 to £37 per ton, ex store.

LEAD ACETATE.—Unchanged at £44 per ton, ex store, spot delivery. Offered from Continent at £41 per ton, c.i.f. U.K.

MAGNESITE, GROUND CALCINED.—English ground at £8 5s. to £8 10s. per ton, ex station. Contiental ,about £7 5s., per ton, c.i.f. U.K. ports.

MAGNESIUM CHLORIDE.—Offered at £1 10s. per ton, c.i.f. U.K. Spot lots, £2 10s. to £3 per ton, ex store.

MAGNESIUM SULPHATE (Epsom Salts).—Commercial quality, £7 per ton; B.P. quality, £8 5s. per ton, ex station.

POTASH, CAUSTIC.—Quoted £29 10s. per ton, c.i.f. U.K.; Spot lots about £32 per ton, ex store.

POTASSIUM BICHROMATE.—Unchanged at 5¾d. per lb. delivered.

POTASSIUM CARBONATE.—96/98% offered at £29 per ton, c.i.f. U.K.; 90/92%, £26 5s. per ton, c.i.f. U.K. Spot lots about £32 and £27 per ton respectively.

POTASSIUM CHLORATE.—Unchanged at 3d. per lb. ex store, crystals or powdered.

POTASSIUM NITRATE (Saltpetre).—Offered at £25 5s. f.o.b. Continental port. Spot lots nominally £32 per ton.

POTASSIUM PERMANGANATE.—B.P. Crystals quoted 10½d. per lb., ex store.

POTASSIUM PRUSSIATE (YELLOW).—Now offered at 1s. 3¾d. per lb.

SODA, CAUSTIC.—76–77%, £21 7s. 6d. per ton; 70–72%, £19 17s. 6d. per ton; 60–62% broken, £21 2s. 6d. per ton; 98/99% powdered, £24 15s. per ton—all ex station, spot delivery.

SODIUM ACETATE.—Unchanged at £25 per ton, ex wharf, early delivery.

SODIUM BICARBONATE.—Refined Recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

SODIUM CARBONATE (Soda Crystals), £5 to £5 5s. per ton, ex quay or station. (Alkali), £8 16s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Commercial crystals offered at £8 5s. per ton, c.i.f., U.K. Spot lots about £9 15s. per ton, ex wharf; Pea Crystals quoted £15 10s. per ton, ex store.

SODIUM NITRATE.—Refined, 96/98% quality, £13 7s. 6d. per ton, f.o.r. or f.o.b. U.K.

SODIUM PRUSSIATE (Yellow).—Unchanged at 7d. per lb., c.i.f. U.K.

SODIUM SULPHATE (Saltcake 95%).—£4 per ton, ex station for home consumption. Higher prices for export.

SODIUM SULPHIDE, 60/62%.—Offered from Continent at £12 per ton, c.i.f. U.K.

SULPHUR.—Flowers, £10 per ton; Roll, £9 per ton; Rock, £9 per ton; Ground, £8 per ton—prices normal.

TIN (CRYSTALS).—Unchanged at 1s. 4d. per lb.

ZINC, CHLORIDE, 98/100%.—Solid about £22 per ton, c.i.f. U.K.

ZINC, SULPHATE.—Commercial crystals offered at £11 per ton, ex store.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHA NAPHTHYLAMINE.—Heavy demand. Price 1s. 6½d., delivered.

BENZIDINE BASE.—Small export inquiry. Price quoted, 5s. 6d. per lb., 100% basis, f.o.b.

BETA NAPHTHOL.—Good home demand. Price quoted, 1s. 1d. per lb., delivered.

CASSELLA "F" ACID.—Price quoted, 10s. per lb. 100% basis, f.o.b.

DINITROCHLORBENZENE.—Home inquiry. Price quoted, £97 10s. per ton, delivered.

METAPHENYLENEDIAMINE.—Somewhat lower. Price, 5s. 2d. per lb. 100% basis, carriage paid.

METANITROANILINE.—Export inquiry. Price quoted, 5s. 6d. per lb., f.o.b.

METATOLUYLENEDIAMINE.—Export inquiry. Price, 4s. 2d. per lb.

PARAPHENYLENEDIAMINE BASE.—Remains firm. Price, 12s. 6d. per lb. 100% basis, delivered.

PARANITRANILINE.—Export inquiry. Price quoted, 2s. 7d. per lb., f.o.b.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, July 5, 1923.

Business in the chemical market here is still more or less in the doldrums. Buyers continue to operate largely for immediate requirements, little interest being shown in fixing up for delivery ahead. A good deal of caution is undoubtedly due to expectations of lower values. At the moment, however, there is no sign of general weakness, although here and there a slight shading of prices is to be reported.

Heavy Chemicals

Caustic soda continues in fair demand for home and export at from £19 for 60 per cent. to £21 10s. per ton for 76–77 per cent. material. Bleaching powder also meets with a quietly steady demand at £11 7s. 6d. per ton to home consumers. There is not much business being done in sodium sulphide, though prices are about unchanged at £14 10s. per ton for 60–65 per cent. concentrated solid and £8 10s. per ton for crystals. Glauber salts are quiet at £4 per ton. Soda crystals are an inactive section, though prices are steady at £5 5s. per ton delivered. Saltcake finds a ready market, particularly for export, and prices are firmly maintained at £4 10s. per ton. Alkali is being steadily inquired for at £7 12s. 6d. per ton for 58 per cent. material. Bicarbonate of soda is moderately active at £10 10s. per ton delivered to home consumers. Hyposulphite of soda is still quiet, and photographic crystals are again easier at £14 per ton, with commercial quoted at £10. Nitrate of soda is still in short supply, and prices are firm at £26 10s. to £27 per ton. Phosphate of soda is rather quiet at £14 10s. per ton. Chlorate of soda is in fair inquiry at 2¾d. per lb. Prussiate of soda is quiet at 6¾d. to 7d. per lb. Bichromate of soda moves off fairly satisfactorily, and prices are steady at 4½d. per lb. Acetate of soda is scarce and in steady inquiry at £25 per ton.

Caustic potash is easier again at £30 per ton for 88–90 per cent. material on a quieter demand. Carbonate of potash is, however, steady at £31 per ton for 96–98 per cent. and £28 for 90–92 per cent. Bichromate of potash is in quietly steady demand at 5¾d. per lb. Yellow prussiate of potash continues inactive and is easier at 1s. 3d. per lb. Chlorate of potash is in fairly steady demand at 2¾d. to 3d. per lb. Permanganate of potash is quiet but unchanged at 9¾d. to 10d. per lb.

Not a great deal of business is passing in sulphate of copper, though prices still range between £26 and £26 10s. per ton, f.o.b. Arsenic is easier at £70 to £72 per ton for white powdered, Cornish makes. Commercial Epsom salts are in fair demand at £4 to £4 10s. per ton, with magnesium sulphate, B.P., quoted at about £6. Acetate of lime is maintained at £21 for grey and £11 per ton for brown, supplies still being on the short side. Nitrate of lead is rather quiet, though unchanged at £42 to £43 per ton. Offerings of sugar of lead are light and quotations steady at £41 to £42 both for brown and white qualities.

Acids and Tar Products

A fair amount of business is being done in tartaric and citric acids, and prices are steady. Tartaric is on offer at 1s. 3½d., and citric, B.P. crystals, 1s. 8d. per lb. Oxalic acid is quiet at 6d. to 6½d. per lb. Acetic acid keeps firm; glacial is quoted at £70 and 87 per cent. technical at £47 to £48 per ton.

There is rather more movement in certain sections of the coal-tar products market. Pitch is stronger again at round £6 10s. per ton f.o.b., parcels for next season's shipment being the subject of inquiry. Carbolic acid crystals are easier at 1s. 3½d. to 1s. 4d. per lb., with crude at 3s. 3d. per gallon. Benzol is being absorbed in fair quantities, and prices are steady at 1s. 7d. to 1s. 8d. per gallon. Creosote oil is unchanged at 9d. to 10d. per gallon. Naphthalene is in quietly steady demand at £20 to £21 per ton for flake and £7 to £13, according to quality, for crude.

Separation of Wax from Wax Distillates

In the study of the problem of the separation of wax from wax distillates, being conducted by the U.S.A. Department of the Interior at the petroleum experiment station of the Bureau of Mines, considerable laboratory work has been performed in analysing pressable and unpressable wax distillate stocks to obtain data which might show the difference between these stocks. A large number of slack wax sweating experiments will shortly be studied.

Chemical Trade with Occupied Germany

Some few weeks ago notices were issued advising British importers that they could obtain delivery of all goods from the occupied territories ordered before February 20 last. The German exporter had to get a licence from, and pay a duty to, his Government, and the British importer had to get a licence from, and pay a tax to, the Franco-Belgian authorities. When these regulations were complied with it was understood that there would be no difficulty in getting such goods through. Unfortunately, the Chemical and Dyestuff Trades Association states, in the numerous instances in which members have applied for Franco-Belgian licences and signified their willingness to pay the tax, it has been found that in practice the facilities mentioned above were not worth the paper they were printed on. Some firms have gone to the length of sending representatives over to endeavour to obtain release of their goods, but after some weeks they have met with very little success. These firms have reported to the British Association that throughout the occupied territories the French authorities dominate the position. They express the opinion that until a settlement of the reparations question is made there is little or no hope of carrying on business, either export or import, with occupied Germany. Appeals to the British representatives on the Rhineland High Commission and to the authorities at home have proved of no use.

Standardisation of Disinfectants

A matter affecting users of disinfectants in large quantities was dealt with at a council meeting of the Pharmaceutical Society of Great Britain on Wednesday, July 4, when Sir William S. Glyn-Jones, secretary and registrar of the Society, reported that a sub-committee had considered at considerable length the subject of the fixation of standards of strength for lysol and chlorodyne. At present there was no standard whatever, and in consequence users of disinfectants were much troubled by the considerable variation of strength existent in the various fluids on the market. The Law Committee of the Society had also reported on the matter and agreed with the previous committee that the Ministry of Health should be approached as to the desirability of fixing standards of strength in regard to both lysol and chlorodyne. A member of the council also pointed out that there were two kinds of lysol on the market, which differed very considerably in greasol content, and some law was very necessary on the subject.

After some discussion it was agreed to follow up the recommendations of the committee.

A New Carbon Black

An interesting form of carbon black is now being put on the market in this country, technically known as "smoke black." An analysis of this black shows that it contains 99·75 per cent. carbon as against 97·8 per cent. of the best American carbon black, ·25 per cent. ash, and no oil or grit. According to the report to Mr. D. D. Spence, F.C.S., of Newcastle-on-Tyne, the black has very good decolorising properties, and being of such a high degree of purity would be suitable for decolorising foodstuffs such as confectionery and sugar, in addition to its obvious advantage on the same score in "cleaning-up" fine chemicals, volatile gases, etc. Its principal use is as a pigment for paints and inks, while it is very suitable as a rubber pigment; though it is not claimed as equal to American carbon black, it is considerably cheaper. The product is being put on the market by Brotchie and Co., Ltd., 32, Fenchurch Street, London, who, however, do not deal direct with consumers.

Petrol as a Refrigerating Agent

A report on the use of the volatile spirit associated with natural gas as a refrigerant has been completed by the U.S.A. Bureau of Mines. This report is based on data collected in trial runs of a refrigerating unit built for use in the Bureau of Mines experimental refinery. The report should prove valuable wherever refrigeration is desired and suitable petroleum spirit is available, particularly where a small and inexpensive unit is desired. The purpose of the wax distillate refining investigation is to determine why high-quality lubricants and wax can be easily manufactured from some crude oils and only with difficulty or not at all from others.

Company News

BROKEN HILL SOUTH.—A dividend is announced at the rate of 1s. 6d. per share, payable on August 10.

DOMINION TAR AND CHEMICAL CO., LTD.—At a meeting held on July 3, the directors authorised the payment, on or before July 12, of an interim dividend of 2½ per cent., free of income tax.

MOND NICKEL CO., LTD.—The directors recommend a final dividend of 7½ per cent., free of tax, making 10 per cent. for the year on the ordinary shares. The preference shares dividend is the same as last year.

BRITON FERRY CHEMICAL AND MANURE CO.—The dividend warrants on the 7 per cent. cumulative preference shares for completion of payment of arrears of interest to December 31 last, and for six months' interim interest to June 30, 1923, have been posted.

BRITISH SOUTH AFRICAN EXPLOSIVES CO.—A dividend is announced for the year ended December 31 last at the rate of 8 per cent., less British income tax at 4s. in the pound, subject to deduction of 1s. in the pound in respect of South African dividend tax.

W. J. BUSH AND CO.—The accounts for the year 1922 show a gross profit of £245,940 and a net profit of £41,788. The directors recommend a final dividend of 5 per cent. on the ordinary shares, making 8 per cent. for the year. The sum of £18,197 is carried forward.

NOBEL INDUSTRIES, LTD.—The definitive certificates in respect of the issue of £1,750,000 5½ per cent. first mortgage debenture stock are ready and will be exchanged for letters of acceptance, which should be forwarded to the company's registered office, Nobel House, Buckingham Gate, London, S.W.1.

NEW TRANSVAAL CHEMICAL CO.—The profit for the year ended June 30, 1922, amounted to £77,036 (against £70,567, for the preceding year). With £6,254 brought forward, a total of £83,290 is shown, from which £10,570 has been transferred to depreciation account. It is proposed to pay a dividend of 15 per cent. (the same as last year) on the ordinary shares, leaving a balance to be carried forward of £10,590.

NITRATE RAILWAYS CO., LTD.—The gross receipts for 1922 totalled £492,146, and the net receipts amounted to £116,652. With the balance brought forward, exchange, interest, etc., and transfer fees there is available £188,945. Income tax, corporation tax, and French taxes absorb £44,328, and the directors have set aside £75,000 for contingencies, leaving £69,617, which they propose to carry forward. The directors regret that, in view of the present position, they are unable to recommend a dividend for the year. The ordinary general meeting will be held at Winchester House, Old Broad Street, London, on Tuesday, July 10, at 11 a.m.

BRITISH DYESTUFFS CORPORATION, LTD.—The report for the year ending October 31, 1922, states that the result of the year's transactions, after providing £411,382 for depreciation and crediting the further amount estimated to be recovered in respect of E.P.D., is a profit of £102,656. The debit balance brought forward from the previous period amounted to £803,355, which leaves a deficit of £700,698 to be carried forward. For the preceding year, after providing £467,106 for depreciation and crediting the estimated recovery of E.P.D., there was a profit of £437,684, but stock values were written down by £1,444,344, giving a net loss of £1,006,660.

BRITISH OXYGEN CO.—The report for the year ended March last shows that, after providing for debenture interest and redemption, depreciation, and usual standing charges, the profit was £131,801 (against £76,849). The directors propose placing £25,379 to general reserve (bringing it to £150,000), and to pay a final dividend at the rate of 1s. 9d. per share, free of tax (absorbing £40,313), which makes, with interim, 2s. 6d. per share, or 12½ per cent., free of tax, for the year, against 10 per cent., free of tax, for the previous year. The balance, they consider, will provide adequately for the payment of income tax and corporation profits tax for the year and leave a considerable sum to be carried forward.

WELSBACH LIGHT CO., LTD.—The report for the year to March 31 last states that the further depreciation of the mark and of other Continental currencies has enabled imports of mantles into this country and overseas markets to be continued on an increasing scale. The question of reimbursement of E.P.D. is still unsettled, pending which income tax and corporation profits tax for the past two years have not been paid. The accounts show a net profit for the year (including profit on realisation of investments and debenture stock redemption amounting to £18,092, but without taking account of any E.P.D. recoverable or liability for income tax or corporation profits tax) of £26,397, making, with £18,412 brought in, a total of £44,809. The directors recommend a dividend of 5 per cent. (less tax) and a bonus of 2½ per cent. (less tax); to reserve of unappropriated discounts on debenture stock redeemed, £7,520; leaving £17,945 to be carried forward, Meeting, Winchester House, London, E.C., on July 12, at 11 a.m.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OF FIRM OR AGENT.	MATERIAL.	REF. NO.
Australia.....	Chemists' and Druggists' Supplies	1

Tariff Change

RUMANIA.—Sulphate of copper is to be exempt from import commission tax.

Contract Open

Tenders are invited for the following article. The latest dates for receiving tenders are, when available, given in parentheses:

MONTEVIDEO (August 22).—Lubricating Oils. Specification, general conditions of tender, etc., can be seen at the Department of Overseas Trade (Room 52), 35, Old Queen Street, London, S.W.1. Ref. No. 8280/F.L./C.C./2.

Low Temperature Carbonisation

A NEW process of low temperature carbonisation is reported from the United States, which has been worked out by V. Z. Caracristi in conjunction with M. Emil Piron, and is stated to have the backing of the Ford Motor Company. The process consists essentially in carbonising coal, roughly pulverised in layers half an inch thick, on a flat metal plate conveyor which is travelling on the surface of a long bath of molten lead kept at about 1,200° F. The carbonisation is complete in five minutes, giving the usual products—low-temperature oils, rich gas, motor spirit, and sulphate of ammonia, together with slightly over 70 per cent. of a residual low-temperature fuel containing 12–15 per cent. of volatile matter. The use of a lead bath in this way, a principle which has already been adopted on another plan in Great Britain by Mr. J. S. Morgan, is an attempt to overcome one of the inherent difficulties of low-temperature carbonisation—that is, the extremely bad heat conductivity of coal. The general principle underlying this and similar metal bath processes is that if molten lead is used as a heating medium the transference of heat both to and through the coal is enormously increased. The Caracristi process has been worked out on a large-scale experimental plant, with a capacity of 25 tons of coal per twenty-four hours, at Huntington, W. Virginia, and the results are stated to be so successful that the Ford Motor Company are going to erect a large plant with a capacity of 4,000 tons of coal per twenty-four hours at their well-known River Rouge power installation at Detroit.

Photographic Material for Brazil

A CONFIDENTIAL memorandum of information regarding the market for photographic materials in the State of Sao Paulo, Brazil, has been issued by the Department of Overseas Trade, 35, Old Queen Street, Westminster, S.W.1, and copies may be obtained by United Kingdom firms interested upon application to Mr. Darbyshire (Room 53).

THE BRITISH ALIZARINE COMPANY LTD.

Manchester London Glasgow

Manufacturers of Alizarine Dyestuffs

ALIZARINE RED (all shades)	ALIZARINE BLUES (soluble and insoluble)
ALIZARINE BORDEAUX	ALIZARINE CYANINE
ALIZARINE GREEN (soluble and insoluble)	ALIZARINE ORANGE
ALIZARINE RED S. POWDER	ALIZARINE BLUE BLACK
ALIZARINE (MADDER) LAKES (of all qualities)	ALIZARINE MAROON
ALIZUROL GREEN (Viridine)	ANTHRACENE BROWN
ALIZANTHRENE BLUE	ALIZANTHRENE BROWN

ALIZANTHRENE YELLOW

Other fast colours of this series in course of preparation

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CHROME TANNING and other Chrome Compounds

TELEPHONES
663 Trafford Park, MANCHESTER
560 EAST LONDON
2667 DOUGLAS, GLASGOW

TELEGRAMS
BRITALIZ MANCHESTER
BRITALIZ LONDON
BRITALIZ GLASGOW

All communications should be addressed to

The British Alizarine Co., Ltd.
Trafford Park, Manchester

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BOOTIMAN (E. H.), LTD., Newcastle-under-Lyme, drug dealers. (M., 7/7/23.) Registered June 21, £250 debenture, to T. G. St. Johnston, Brighton Road, Sparkbrook; general charge.

CLEMENT AND JOHNSON, LTD., London, W.C., chemists. (M., 7/7/23.) Registered June 23, £100, £100 and £3,500 debentures part of £50,000; general charge. *£38,700. January 12, 1923.

HOLDERS (LONDON), LTD., London, E.C., chemical merchants. (M., 7/7/23.) Registered June 22, £1,000 debentures (filed under sec. 93 (3) of the Companies (Consolidation) Act 1908), present issue £300; general charge.

MORRIS AND CO. (STOCKWITH), LTD., chemical manufacturers. (M., 7/7/23.) Registered June 22, £15,000 debenture, to Westminster Bank, Ltd.; general charge.

VEGETABLE OILS AND MARGARINE, LTD., London, E.C. (M., 7/7/23.) Registered June 25, £15,000 2nd debentures; general charge (subject to £20,000 1st debentures).

Receiverships

COTHERCOTT CO., LTD. (R., 7/7/23.) W. G. Hall, of Hull, incorporated accountant, was appointed receiver and manager on June 20, 1923, under powers contained in debentures dated July 15, 1922.

LONDON DYE MANUFACTURING CO., LTD. (R., 7/7/23.) W. G. Wilson, of 37–9, King William Street, E.C., was appointed receiver and manager on June 23, 1923, under powers contained in debenture dated December 21, 1922.

London Gazette

Companies Winding Up Voluntarily

ANGLO-CONTINENTAL OIL COMPANY, LTD. (C.W.U.V., 7/7/23.) V. C. Bianchi, 34, Nicholas Lane, London, chartered accountant, appointed liquidator.

SCHULTZE GUNPOWDER COMPANY, LTD. (C.W.U.V., 7/7/23.) W. Morris and O. G. Will appointed liquidators. Meeting of creditors at Nobel House, 2, Buckingham Gate, Westminster, at 3 p.m., on Monday, July 16.

Partnerships Dissolved

OLDFIELD, PATTINSON AND CO (Thomas Ross PATTINSON, Henry Keeler OLDFIELD, and William Ross PATTINSON), wholesale druggists, Umpire Buildings, New Bridge Street, by mutual consent as from April 30, 1923. Debts received and paid by H. K. Oldfield, who will continue the business.

TEBBUTT, STRANGE AND CO. (Lionel Francis TEBBUTT, Lionel Hastings STRANGE, and Charles Horace IVINSON), manufacturing and research chemists and chemical and general manufacturers, merchants, traders, brokers and agents, Imperial Buildings, New Bridge Street, Ludgate Circus, London, as from May 12, 1923, by mutual consent. The business will be carried on by L. H. Strange.

Edinburgh Gazette

BITUMEN PRODUCTS, LTD. (C.W.U.V., E.G., 7/7/23.) G. F. Todd, C.A., Glasgow, appointed liquidator.

New Companies Registered

BIDEFORD STORAGE, LTD. Manufacturers of and dealers in fertilisers, artificial manures, oil refiners, etc. Nominal capital, £1,000 in £1 shares. Solicitors: Linklaters and Paines, 2, Bond Court, Walbrook, London, E.C.4.

BUTTERWORTH AND TURNER, LTD., 22, Standish Street, Burnley. Chemists, druggists, drysalters, oil and colourmen, etc. Nominal capital, £4,600 in £1 shares.

CAMEL DRUG CO., LTD., 104A, Guildford Street, London, W.C.1. Chemists, druggists, drysalters, etc. Nominal capital, £1,000 in 1s. shares.

CARLTON LABORATORIES, LTD., 6, Norwich Road, Triangle, Bournemouth. Manufacturers, refiners, importers and exporters of and dealers in all kinds of oils, oleaginous and saponaceous substances, dyestuffs and dyes, etc. Nominal capital, £5,000 in £1 shares.

A. G. COLLINS AND BROTHER, LTD. Oil refiners and blenders, soap, grease, tallow and candle manufacturers, chemical manufacturers, drysalters, etc. Nominal capital, £5,000 in £1 shares. Solicitor: A. C. Hooper, Post Office Chambers, Bute Docks, Cardiff.

DOUGHTY-RICHARDSON FERTILISERS, LTD. Bone and shell-crushers, manufacturers of sulphuric acid, chemical, fish, bone and artificial manures, etc. Nominal capital, £50,000 in £1 shares. Solicitors: Teynbee, Larken, Mason and Co., 7, Bank Street, Lincoln.

LONDON LEAD OXIDE CO., LTD., 107, Bishopsgate, London, E.C. Manufacturers of lead oxide and other chemicals. Nominal capital, £25,000 in £1 shares.

NEW MOTOR SPIRIT CO., LTD., Finsbury House, New Blomfield Street, London, E.C.2. Oil refiners, chemists, manufacturers of and dealers in motor spirit of all kinds. Nominal capital, £50,000 in 30,000 8 per cent. cumulative participating preference shares of £1 each and 200,000 ordinary shares of 2s. each.

SOLAC (1923), LTD. To acquire any patents and rights relating to the manufacture, treatment, distribution and use of synthetic milk and derivative products or by-products. Solicitors: Devonshire, Wreford Brown and Co., 38, Old Jewry, London, E.C.

Dye Standardisation in America

PROBLEMS of dye standardisation are receiving intensive attention at the American Bureau of Standards. One chemist is devoting exclusive attention to this subject, and it is hoped to add to the facilities after the new fiscal year, which began on July 1. Standardisation is being approached through methods of identification of species, determination of colour strength, and determination of quality. Other problems, such as a method of assuring matching of colours in textiles, are to be taken up.

A report on dye standardisation work at the Bureau was submitted on June 1 by Dr. C. E. Waters, chief of the Chemical Division, and Mr. W. D. Appel, dye specialist, to the main advisory committee of the Textile Division, composed of representatives of the larger textile trade associations. Each textile trade association has been requested to appoint a committee of from one to three members to co-operate with the Bureau of Standards in its dye work.

Picric Acid at Liverpool Docks

ARISING out of the recent fire at Liverpool Docks, in which a consignment of picric acid was involved, a deputation from Liverpool and district was received by the Under-Secretary for War on Wednesday, June 27.

Since the incident had been brought to the notice of the War Office a small technical committee had been set up to ensure that the transport of the remaining stock should be carried out under the safest possible conditions. In view, however, of the representations of the deputation the Under-Secretary undertook that before any further shipment of picric acid was made via Liverpool the technical committee would consult the Mersey Docks and Harbour Board in regard to the matter, and as to whether there were any additional safety measures which they desired.